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STEEL

The Magazine of Metalworking and Metalproducing

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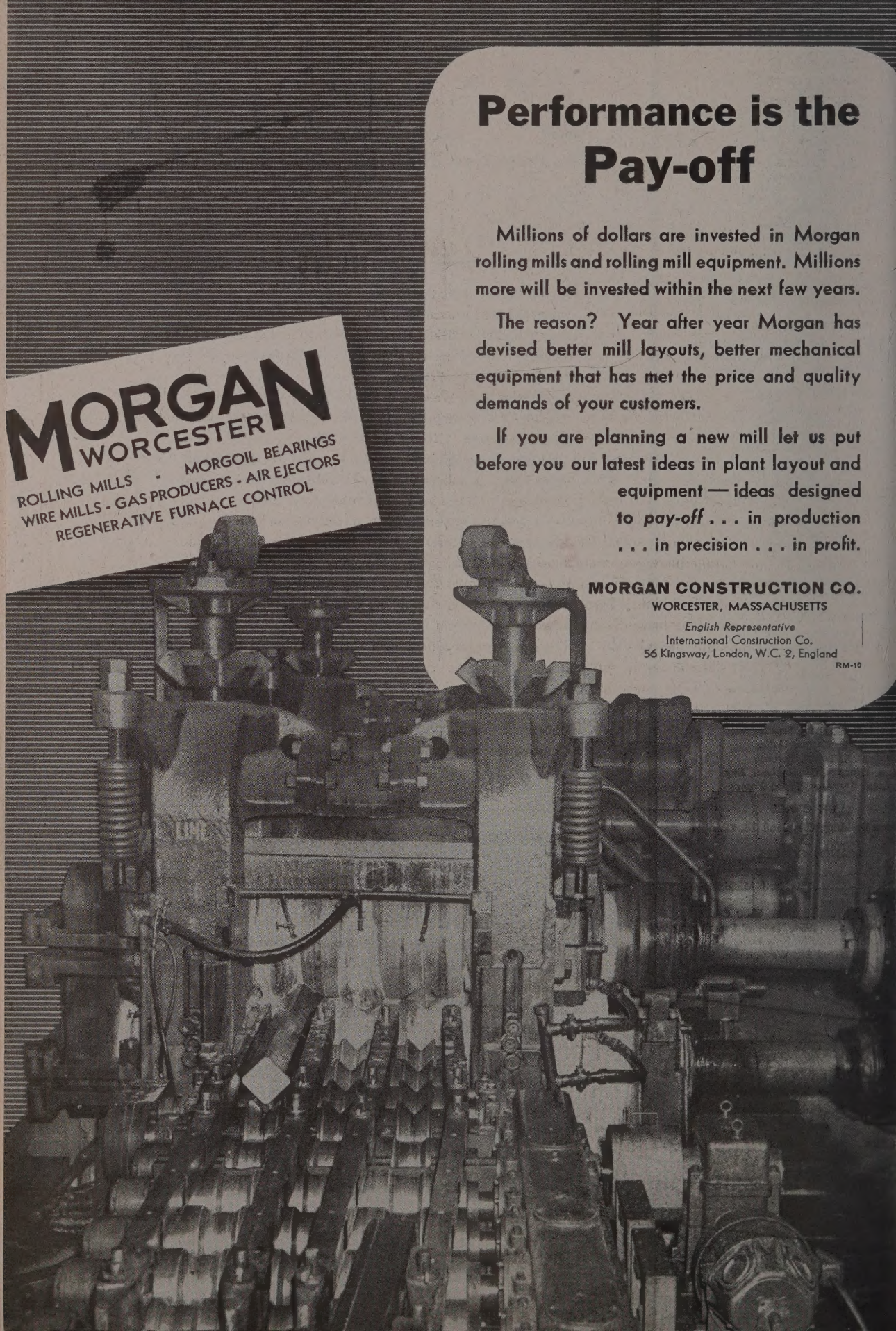
NEWS

TECHNICAL

MARKETS

★ Denotes regular features.



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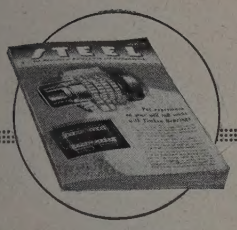


March 3, 1947

Multiple-Industry Bargaining

One issue being debated in connection with improved labor legislation is industry-wide bargaining. Many critics of existing labor policies believe that some of the abuses that have caused trouble in recent years could be avoided in the future if unions were required to bargain on a company basis instead of on the basis of an entire industry.

In considering this issue, lawmakers in Washington should give special attention to the industries which produce, process and fabricate iron and steel, because in this important sector of American industry we have something worse than industry-wide bargaining. It is multiple-industry bargaining.

The rank injustice of this practice was demonstrated a year ago when the contract adopted by the United Steelworkers of America and the subsidiaries of United States Steel Corp. was forced down the throats not only of other steel producers, but also of steel constructors, fabricators, forge shops, foundries, metal stamping shops and equipment manufacturers. Many of these nonsteel industry companies were forced to grant wage increases identical with those paid by steel producers and shortly thereafter to pay the higher prices for steel authorized by OPA to partially reimburse the steel producers for their higher wage burden. OPA price relief for the non-basic steel companies came belatedly or not at all.

Naturally the non-basic steel enterprises protested these injustices vigorously. Some of them did manage to work out contracts with the unions which had later expiration dates than the contracts held by basic steel companies.

When the steel producers and United Steelworkers began negotiating for a new 1947 contract, they wisely agreed to a 75-day extension of the 1946 contract, which carries it to April 30. The non-basic steel shops have been seeking a similar extension which, if granted, would make their old contracts effective until dates later than April 30. Non-basic steel employers feel it is only fair that they be permitted to negotiate their new contracts after their suppliers, the steel producers, have signed their contracts and thus have indicated how the new settlements are likely to affect steel prices. The unions have balked at granting this extension.

Their reluctance makes it look as if CIO is trying to retain multiple-industry bargaining as well as industry-wide bargaining. Congress should help the non-basic steel interests in their fight for an independent status in labor relations. It is a first and imperative step toward an equitable national labor policy.

* * *

PRICE TURN DELAYED: Around the turn of the year there were a number of hopeful signs that the inflationary trend in prices was leveling off. The cost of living declined slightly in the month ending Jan. 15. Ford Motor reduced automobile prices. Quotations of some food and clothing prices were down substantially. Numerous respected spokesmen for finance and industry stressed the desirability of doing everything possible to induce an orderly downward movement of prices at the earliest possible moment.

Unfortunately leveling indicated in January has not materialized. Some food prices again are tending upward. Now, when the impact of the freight rate increases made effective Jan. 1 is beginning to be felt by shippers, railroads are saying that additional increases will be necessary. Steelmaking scrap is at a fantastically high price, although relief in this commodity may be expected within 60 days. The effect of new extra cards on steel has not been digested by consumers, nor have the repercussions of pending wage negotiations upon prices been determined.

In short, too many high-cost ingredients still are

(OVER)

AS THE EDITOR VIEWS THE NEWS

being stirred into the economic batter to permit us to eat cheaper pie immediately. If a definite, general turn in prices does not take place before the end of the second quarter, we will be in for serious trouble. Until then, continued high production will be our best price corrective influence.

—pp. 81, 93, 189

* * *

NOW IT IS BOX CARS: Having experienced almost every other conceivable bottleneck since V-J Day, American industry probably should not be too much surprised by the freight car shortage which already has slowed down manufacturing operations in some sections and threatens more serious trouble if bad weather continues long.

The shortage is easy to explain. The railroads now are handling about 20,000 more box car loadings per week than they were a year ago and they are attempting to do it with 7600 fewer box cars than were available then. For a number of years during and following the war, railroad rolling stock has been wearing out faster than it has been replaced.

Immediate relief can come only from fair weather and greater efficiency in the use of available cars. New cars, the ordering of which has been stepped-up appreciably since the roads were granted freight rate increases, cannot ease the existing shortage much before April. Meanwhile, motor carriers are unable to accommodate all of the business that is being diverted to them. —p. 82

* * *

A WAY TO CUT COSTS: An article in this issue deals with the relatively simple problems involved in the handling of steel bar stock received by motor truck. It discusses the physical handling of the bars as well as the all-important paper work.

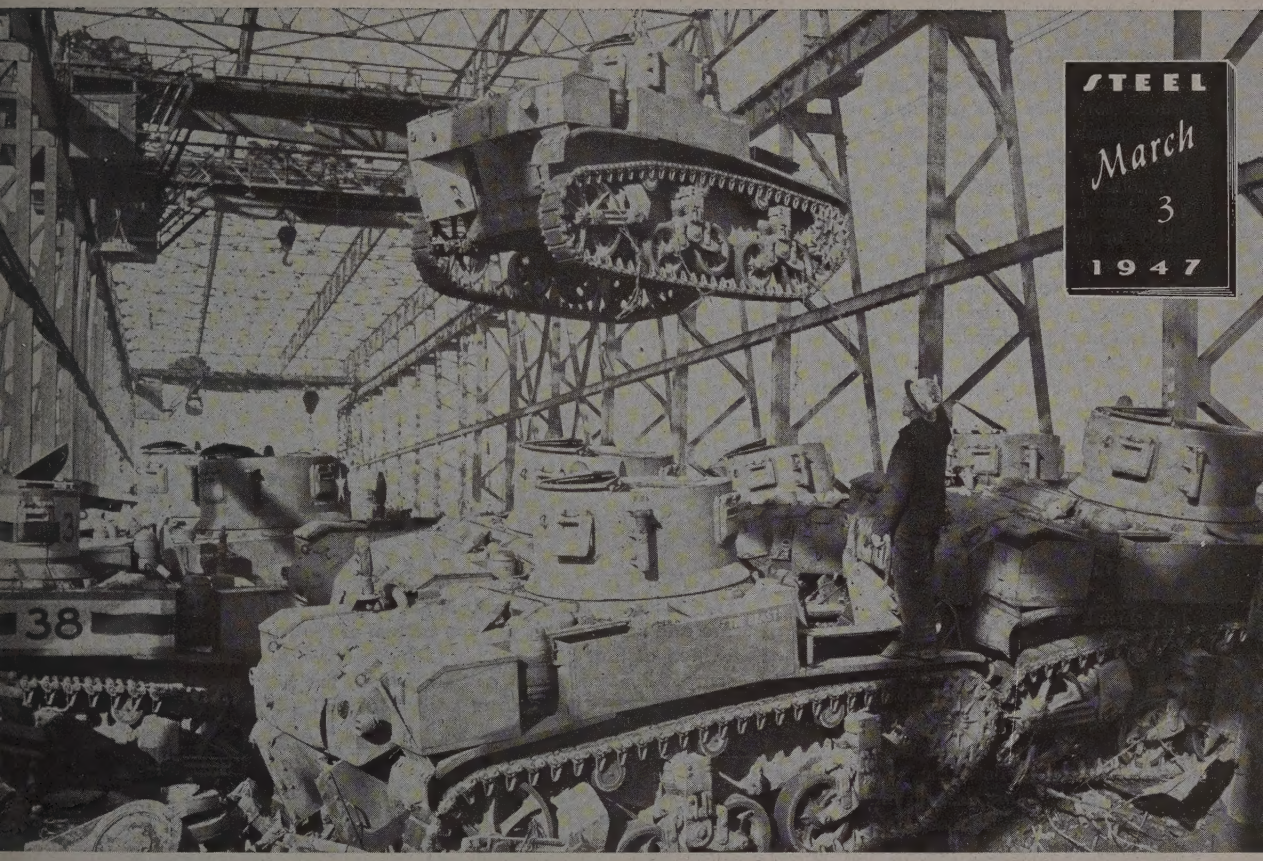
The author's sound advice as to methods of unloading and handling bar stock that has been improperly shipped suggests that many shippers and consignees, in failing to insist that goods be bundled and loaded correctly, are incurring high handling costs unnecessarily. In recent years most manufacturers have invested heavily in efficient materials handling equipment. When a truck shipment arrives, loaded in such a way that it must be unloaded by methods of the horse and buggy days, a good opportunity to cash in on the investment in modern handling equipment is lost.

A little checking with supplier and motor carrier on this point may save you money. —p. 124

SIGNS OF THE TIMES: If present sentiment in the House appropriations subcommittee prevails, the budget of the Department of Labor will be cut drastically. The subcommittee may recommend substantial reductions (p. 90) in U. S. Conciliation Service, U. S. Employment Service, Wage & Hour Division, Bureau of Labor Statistics and Apprentice Training program and virtual elimination of several other bureaus. . . . A British machine tool builder has brought out a repetitive lathe that is typical of British postwar design. This lathe makes parts in one operation which normally require two or more. Although manually operated, it has a production speed on some types of work equal to that of an automatic. It is designed to appeal to manufacturers who want something less complicated than a fully automatic machine (p. 134), yet more adaptable than an ordinary turret lathe. . . . New freight rates effective last Jan. 1, which superseded interim increases established last July 1 (p. 93), have imposed a burden on the steel producing industry estimated at from $60 to $65 million annually. . . . Employment in nonagricultural establishments declined 1,138,000 in January to 39,657,000. The drop is seasonal (p. 92) and conforms to the pattern of previous years. . . . By October, Italian steelmakers had managed to increase ingot production to 134,000 tons, about 60 per cent of average monthly output in 1939 (p. 95), and were hopeful prewar production levels would be reached in 1947. Coal shortage and unusually adverse winter weather have dealt a severe blow to these expectations. . . . In recent tests on the Mesabi iron range, vertical blast holes 6 in. in diameter and up to 30 ft deep have been bored in taconite at an average rate of 10 ft per hour by a new process (p. 128) called fusion piercing. It consists of a flame produced by burning oxygen and a flux-bearing fuel in a special blowpipe which is directed against the surface of the ore, causing the rock to spall, flake off or melt. . . . New orders, shipments and backlogs of orders for machine tools are slacking off (p. 83) but bookings and shipments for foundry equipment still are mounting. . . . More than three-fifths of the steelmaking facilities and half of the ironmaking facilities financed by the government between 1940 and 1944 (p. 84) have been purchased by private industry. Barring serious interruptions, the steel industry will ship 18 per cent more finished steel to consumers in 1947 than was shipped to them in 1941.

E. L. Shaner

EDITOR-IN-CHIEF



Awaiting the "skullcracker" in the scrap preparation yard of the Bethlehem Steel Co. plant at Bethlehem, Pa., these 10-ton Army tanks soon will return to the open hearths. Bethlehem purchased 70 tanks of this type for scrapping

crap Market Believed Near Crest

Demand continues active and prices strong, but return to normal trading within 60 days possible. Prices highest since July, 1917, when $40.25 was paid for heavy melting steel. Flow of production scrap increasing. Fair weather will aid collections

THE SCRAP iron and steel market sents something of an enigma at the ment.

Though consumers continue to mble all over the map for every ilable pound of metal, and veteran p men describe the situation as the st hectic and confused in their ex- ience, a note of caution is develop- in trade circles with the view being reasingly voiced that market is at, at least is close to, the top.

Predictions are even being made that rn of normal trading can be expected hin 60 days.

How much weight should be attached these views is uncertain. Prices are rising, last week upward adjustments ng effected at lesser consuming points as local buyers upped offers in a move to halt raids on home area supplies by distant mills. On the other hand, a degree of price stability is reported at Pittsburgh and Chicago, prices at those points holding firm at the higher levels recently established.

Currently, heavy melting steel is quoted at $35, Pittsburgh, though sales have been rumored up to $42, consumers paying premiums on material brought in from distant points. This is the highest price quoted since July, 1917, when $40.25 was paid. Nothing like that figure was attained in any year since until the present. As a matter of fact prices over the years have averaged under $20 per ton, in the period 1935 to 1946 averaging $18.24, a period in which demand was record-breaking. Average yearly prices for 1935 through 1947 to date are given in the following table:

HEAVY MELTING STEEL PRICES, 1935-1947

(Yearly Averages, Pittsburgh)

Year	Average
1935	$13.04
1936	15.93
1937	18.90
1938	13.94
1939	17.16
1940	19.26
1941	20.32
1942	20.00
1943	20.00
1944	19.40
1945	20.00
1946	20.95
1947	33.13°

° Two months.

Scrap trade observers point out that the attractive prices now being paid are drawing out a large volume of material. Heavy tonnages of production scrap are flowing from manufacturing plants, something like 25,000 tons weekly alone coming from the automobile industry. Other manufacturing lines are chewing

up steel at record-breaking peacetime rates with resulting large volume scrap production. All of this material is being quickly moved back to the steel mills where stockpiles are reported rising, some plants now holding more metal than at the beginning of the year.

Another point made in support of the view an easier market situation is likely to develop soon is the fact that with the return of spring weather collections of country and general scrap are likely to rise substantially under the stimulus of the high prices now prevailing. Expectations are, however, such scrap will not be as plentiful as it was prewar since sources were pretty well denuded of material during the war years when intensive collection drives were put on.

At the same time, automobile scrapping is likely to increase as more and more new cars roll from the automobile plants, so that a source of scrap supply which had shrunk considerably during the war years when auto graveyards withheld parts for the auto replacement market assumes more robust proportions.

From still another direction, hopes are held out that a substantial quantity of scrap will come onto the market in the not distant future through the scrapping of a large volume of ancient surplus tools now held by the government. Just what this will amount to is unknown, but estimates in Washington last week ranged all the way from $37 million to $100 million as the value of the tools likely to be so disposed of.

Lower Proportion of Scrap Used

Currently the steel mills are reported utilizing more pig iron than scrap in their melts, with pig iron selling at a lower price. On the basis of normal melting practice something like 2,000,000 tons of purchased scrap monthly would be required to support the current high ingot operating rate of 92.5 per cent of capacity. Even at the reduced scrap melt the amount of scrap being consumed stacks up well with normal peacetime volume.

In event of a price increase on pig iron, now being talked in the trade, a reversal of present melting policy would be likely. Meanwhile, the steel mills continue to accumulate scrap and when their stockpiles attain substantial size they can be expected to withdraw from the market. A resulting break in scrap prices would not be surprising. That the scrap trade is conscious of this is seen in the fact that dealers are keeping material moving through their yards as rapidly as possible. No dealer hoarding, or stockpiling is reported anywhere. Incidentally, reports that scrap is being accumulated at Detroit for shipment by vessel when lake navigation opens are unfounded. So far as can be learned only one vessel is loaded with scrap at that point, and this material is destined for shipment to the head of the lakes. Some dock stocking on the part of mills is not unlikely before the opening of navigation, however.

NORMANDIE WRECKED FOR SCRAP: Closing chapter in the life of the French luxury liner NORMANDIE, renamed the LAFAYETTE shortly before fire and water sent her to the bottom of the Hudson river in 1942, is being written at Port Newark, N. J., by a crew of laborers converting her to scrap. Built at a cost of $40 million, the liner was sold to Lipsett Inc., contractors, for $161,680. NEA photo

Throughout 1946 scrap consump continued close to the record levels tablished during the war. Indications

(*Please turn to Page* 205)

Raw Material and Finished Goods Shipmen Slowed by Car Shortages and Bad Weather

FREIGHT car shortages throughout the country threaten to seriously slow down manufacturing operations with finished goods piling up in plants, and the flow of raw materials and essential components to sustain production schedules erratic.

Storage space in some manufacturing plants is reported rapidly being taken up. For example, Mullins Mfg. Corp. with 3300 employees at its Warren and Salem, O., plants, reported last week it had 75 carloads of finished products on hand at Salem and about 25 at Warren awaiting shipment. This is typical of conditions in manufacturing plants in virtually all centers. Steel plants everywhere are being hit by the car shortage, both with respect to the movement of steel into consumption and receipt of raw material such as scrap which in many cases is being drawn in over long distances.

Shippers are diverting as much traffic as possible to the trucking lines. However, trucks are in short supply, especially in view of the increased load on them, and further, adverse weather conditions recently have slowed down tr shipments appreciably.

Car shortages are attributable to ord-breaking demand and a war-redu car supply. Box car loadings are ning 20,000 cars per week ahead o year ago with 7600 fewer box cars av able now than at that time.

Correction of the shortage hinges most entirely upon the ability of railroads to acquire more cars. On 1 the Class 1 roads had 69,538 frei cars on order as against 38,000 a y ago. In January the roads put 2795 cars in service compared with 2457 the like month, 1946. Beginning April it is hoped the car shops can production of cars to 7000 per mo Steel for this enlarged program to extent of 175,000 tons monthly will allocated on a voluntary basis by steel producers. This car program be increased later on to 10,000 monthly. Domestic freight car aw in February were reported heaviest s December, 1944, preliminary data dicating more than 15,000 units pla

Tool Shipments, Orders Decline To Postwar Low

Builders' bookings in January off 1 per cent from preceding month. Backlog continues decline under way since July

EFFECT of government surplus ma-ine tool sales on demand for new equip-ent from machine tool builders is re-ected in January orders.

Since last April dollar volume of new ders has been tending downward, and January declined about 1 per cent be-w December, marking a new postwar w. However, volume is still consider-ly above prewar levels.

Although some builders expect govern-ent surplus sales to continue for some onths there is belief the cream of the rplus has been disposed of and that mpetition from that source will lessen on.

Government sales are not the only fac-r held responsible for the decline of w tool orders. Some builders point out dustrial plants hesitate to order equip-ent because indifference on the part of ployees is holding down productivity existing machinery.

About a third of the new orders in nuary came from abroad and that field ould be even brighter were it not for e poor financial condition of foreign untries.

Continued decline of orders and fair-steady shipments have reduced the ma-ine tool industry's backlogs to the low-t point since the war. Backlogs have en dropping steadily since last July, the test decline putting the January total 4 r cent below that for December. Never-eless, the present backlog is consider-ly higher than total shipments in some ewar years.

Shipments in January were estimated $26,542,430 by the National Machine ol Builders' Association, Cleveland. This mpares with a 1946 monthly average of 7,120,666.

Favorable aspect of the January sum-ary of the machine tool builders' asso-ation is a decline in order cancellations. only two months of 1946 was dollar lume of cancellations lower than in nuary, 1947.

Shortages of materials and components ll handicap tool shops. Fractional horse-wer motors continue in tight supply. e world shortage of copper threatens further extend the motor shortage and o increase the problem of obtaining copper tubing for cooling and lubrication equipment for machine tools. Some builders report an improvement in castings procurement, while others are experiencing considerable difficulty obtaining sheet steel for guards, etc.

Surplus Sales Cut Down New Tool Orders in New England

Boston—New orders, backlogs and deliveries vary widely with builders of metalworking machinery. Volume is down sharply with many shops producing the standard machine tools. Heavy selling of surplus machines in this category at low prices is taking toll in orders for new units.

Shipments against backlogs, which are declining, are in excess of bookings.

On the other hand builders of special metalworking machines have backlogs for a year or more.

Surplus tools are the major factor in retarding volume in standard machines. Many metalworking plants have taken over surplus in much greater unit volume than would be the case in new machines, primarily because of the bargain prices at which they are available.

Another restrictive factor is the delay in prospective productive capacity expansions for some metal products, planned earlier but retarded by material shortages and labor trouble. Numerous postwar programs have been revised, thus affecting potential machine tool orders.

Foundry Equipment Orders at Highest Point Since August

Continued efforts to replace and rehabilitate war-worn equipment boosted January orders for foundry equipment and repairs. The Foundry Equipment Manufacturers Association reported its order index for new equipment up from December's 379 per cent of the 1937-38-39 average of 100 to 466.9 per cent, highest since last August.

The index of orders placed for repairs climbed from December's 600.3 per cent to 665 per cent in January. In only one month of 1946, October, did the repairs index exceed that of January.

The increases in indexes of orders for new equipment and repairs boosted the association's index of total sales in January to 513.4 per cent of the 1937-38-39 average of 100, highest monthly index since last August.

Present, Past and Pending

■ KAISER LEASES PART OF CONTINENTAL PLANT

DETROIT—Kaiser-Frazer Corp. has leased a portion of the Continental Motors Corp. plant here to be used for the production of automobile engines, which have constituted a difficult supply problem for the Kaiser company.

■ BOOKS $2 MILLION ROLLING MILL EQUIPMENT

SALEM, O.—Orders totaling $2 million for rolling mill equipment, for steel and brass, were booked by the E. W. Bliss Co. during January.

■ STETTINIUS TO JOIN NEW RAIL FEDERATION

CLEVELAND—Chesapeake & Ohio Railway has announced that Edward Stettinius, former chairman of the United States Steel Corp. and former Secretary of State, will serve as chairman of an advisory council for the new Federation for Railroad Progress being formed by Robert R. Young, chairman of the Alleghany Corp.

■ OLIVER TO CENTRALIZE HEADQUARTERS AT SOUTH BEND

SOUTH BEND, IND.—Oliver Corp., manufacturers of farm implements, will centralize its headquarters here. About 300 members of the general executive, engineering, and purchasing departments, now located in Chicago and other cities, will be moved to South Bend.

■ STRUCTURAL STEEL BOOKINGS GAIN IN JANUARY

NEW YORK—Bookings of fabricated structural steel in January amounted to 101,304 tons, a 5 per cent increase over the preceding month, according to the American Institute of Steel Construction. Shipments totaled 126,868 tons, an increase of 37 per cent.

■ CARNEGIE TO REBUILD YOUNGSTOWN STACK

YOUNGSTOWN—Carnegie-Illinois Steel Corp. will enlarge its pig iron capacity at the Ohio Works by 70,000 tons annually by rebuilding the No. 4 blast furnace. Capacity of the stack will be increased from 750 to 950 tons daily.

More Steel Available Than in '41

War program took more than tenth of output in last "peacetime" year. Ingot capacity now is 7 per cent greater

EIGHTEEN per cent more finished steel can be shipped to consumers this year than they received in 1941, if the industry is permitted to operate at top rates without interference from strikes.

This observation is based on an analysis of 1941 shipments and capacity then and now, made by the American Iron & Steel Institute.

In 1941, one-tenth of total steel shipments went for United States war and national defense purposes, yet shipments for peacetime purposes permitted record production of many durable goods.

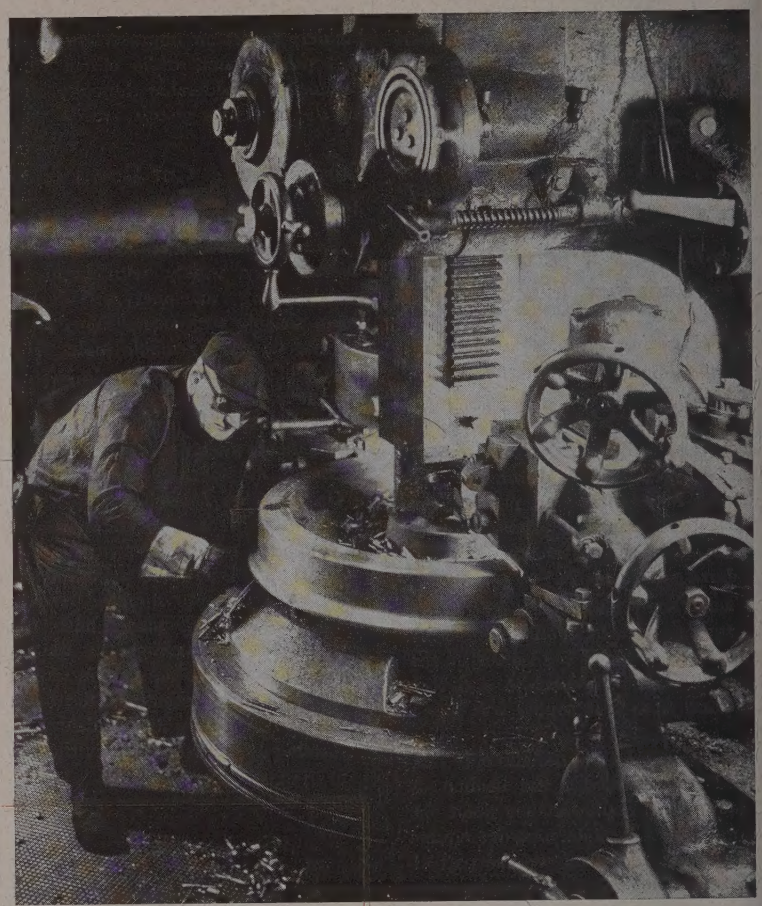
Although 1941 is often cited as a "peacetime, peak consumption" year, the records show the United States defense program was already well under way in that year with the construction of war plants and barracks, a rise in shipbuilding and aircraft production, the beginning of American munitions production and larger shipments to our future allies.

For example, construction of defense plants, shipyards, cantonments and bases required 2,319,500 tons of steel in 1941. The growing shipbuilding program called for 2,733,400 tons of steel, while the aircraft industry took 261,416 net tons. Another 1,413,246 tons were used in the production of projectiles, ordnance and tanks.

Moreover, there were other war and defense-influenced requirements for steel in that year which cannot be clearly segregated from normal peacetime needs, including considerable tonnages entering construction of special pipelines.

Another effect of the war upon 1941 steel distribution was the jump in steel exports, chiefly to our future allies. Whereas average annual exports of steel during the 1936-39 period amounted to 2,131,000 tons, the 1941 total had tripled that to 6,403,000 tons.

Even if today's capacity were no larger than that of 1941, the elimination of direct domestic war needs at present would make available almost 11 per cent more steel for peaceful domestic uses than in 1941, without considering the abnormal export situation of 1941 and today. However, the January, 1947, ingot steel capacity of the nation was 7 per cent larger than the average capacity for 1941. Combining these two factors, today's potential finished steel for peacetime uses is 18 per cent larger than in 1941.



WHEEL OUTPUT RECORD: Workman machines car wheel at the McKees Rocks wheel and axle shop of Carnegie-Illinois Steel Corp. to help overcome the country's car shortage. Plant produced 23,959 car wheels in January for an alltime record

Industry Purchases 60% of U.S.-Owned Steel Capacity

Nearly three-fifths of the steelmaking facilities financed by the government between 1940 and 1944 have been purchased by private industry. More than half the ironmaking facilities also have been sold to the industry.

Bulk of purchases of government-owned facilities by the industry occurred during the last seven months of 1946, according to an analysis by the American Iron & Steel Institute. Facilities purchased include not only steel and blast furnaces, but also rolling mills, coke ovens, sintering plants and oth auxiliary equipment.

Official figures reveal almost 59 p cent of the 6,770,040-ton governme financed open hearth and electric f nace facilities had been purchased the steel industry, another 9.9 per c had been leased and 2.8 per cent of g ernment facilities were dismantled other use. Up to the end of 1946, ab 53 per cent of the 6,843,000-ton gove ment-owned blast furnace capacity h been sold to private industry, and balance was still listed as "war surplu

At the end of 1946, about 13 per c of government-owned steelmaking fac ties had been declared surplus, but w awaiting sale. Another 15 per cent h not yet been declared surplus.

The acquisition of 3,649,000 tons government-owned ironmaking facili by the iron and steel industry me that 12,109,000 tons of war-built ir making capacity is now being utiliz or 79 per cent out of the overall t of 15,303,000 tons.

ecline of Steel Shipments in 1946 eflects Steel and Coal Strikes

Movement from mills to consumers totaled 53,073,421 tons, compared with 62,246,468 tons in 1945. Decline largest in plates and bars, reflecting decrease in shipbuilding and munitions production. Some light products gain

REFLECTING the lost production sed by strikes, the total of steel prod- made for sale and shipped in 1946 pped to 53,073,421 tons, compared h 62,246,468 tons in 1945, according he American Iron & Steel Institute. Declines were noted in most products, were greatest in plates and bars, re- ting the decrease in shipbuilding and nance production.

late shipments in 1946 totaled 4,402,- tons, compared with 7,062,329 tons 1945. Plate production reached its k in 1943, at 12,967,000 tons.

Hot-rolled bar shipments last year to- d 8,442,000, compared with 9,406,- tons in 1945. Cold-finished bar ship- ts were 1,516,969 tons, against 1,940,- tons in 1945.

Hot-rolled sheet shipments were 6,377,- 831 tons last year, against 6,782,952 tons in the preceding year. Cold-rolled sheets showed an increase to 4,078,951 tons in 1946 from 2,891,180 tons in 1945. Galvanized sheet shipments were 1,463,- 778 tons in 1946 and 1,707,292 in 1945.

Hot-rolled strip shipments declined 43,000 tons from 1,643,111 in 1945 to 1,600,988 in 1946. Cold-rolled strip increased slightly from 1,275,670 tons in 1945 to 1,308,050 tons in 1946.

Hot dipped tin and terne plate shipments fell from 2,060,788 tons to 1,924,- 657 tons, but electrolytic tin plate increased from 861,634 to 909,173 tons.

Drawn wire made a slight gain from 2,059,214 tons to 2,068,716 tons.

Effective steel finishing capacity last year was 64,648,000 tons and was operated at an average of 76.1 per cent. In 1945, an effective finishing capacity of 67,310,000 tons was operated at 84.1 per cent.

For December last year, shipments of steel for sale amounted to 4,854,207 tons, or 82.7 per cent of capacity.

Details for 1946 and December production and shipments are shown in the accompanying table.

Porcelain Enamel Shipments Set 10-Year High in 1946

During 1946, porcelain enamel shipments reached the highest level of the past 10 years, amounting to $74,400,000, the Porcelain Enamel Institute said.

December shipments of porcelain enameled products amounted to $6,900,- 000, twice as great as the December, 1945, total. Stove, refrigerator and washing machine parts and table tops comprised 35 per cent of December, 1946, total. Shipments of store fronts and other porcelain enameled architectural parts were over seven times greater in December, 1946, than in the comparable month of 1945.

AMERICAN IRON AND STEEL INSTITUTE
CAPACITY, PRODUCTION AND SHIPMENTS

Period DECEMBER - 1946

Steel Products	Number of companies	Items	Maximum Annual Potential Capacity Net Tons	Current Month: Production Net Tons	Current Month: Production Per cent of capacity	Current Month: Shipments (Net Tons) Total	Current Month: Shipments (Net Tons) To members of the industry for conversion into further finished products	To Date This Year: Production Net Tons	To Date This Year: Production Per cent of capacity	To Date This Year: Shipments (Net Tons) Total	To Date This Year: Shipments (Net Tons) To members of the industry for conversion into further finished products
ts, blooms, billets, tube rounds, sheet and tin bars, etc.	41	1	xxxx	xxxx	xxx	309,336	139,162	xxxx	xxx	*3,595,372	1,645,748
ctural shapes (heavy)	12	2	9,421,550	314,110	41.2	309,570	xxxx	*3,466,193	39.2	*3,479,683	xxxx
l piling	4	3		15,215		16,432	xxxx	219,694		205,454	xxxx
es (sheared and universal)	29	4	17,080,770	396,498	27.4	394,156	7,954	*4,473,331	26.2	*4,402,890	250,709
p	6	5	xxxx	xxxx	xxx	19,505	10,194	xxxx	xxx	421,699	194,666
s—Standard (over 60 lbs.)	4	6	3,657,000	161,684	52.2	162,540	xxxx	1,822,680	49.8	1,795,201	xxxx
—All other	5	7	392,000	12,848	38.7	11,865	xxxx	144,304	36.8	145,425	xxxx
e bars and tie plates	13	8	1,745,960	51,070	34.5	53,625	xxxx	619,005	35.5	648,326	xxxx
k spikes	11	9	349,400	13,053	44.1	14,300	xxxx	140,691	40.3	146,887	xxxx
Rolled Bars—Carbon	34	10	xxxx	620,809	xxx	510,128	50,500	6,961,888	xxx	5,714,850	707,991
—Reinforting—New billet	16	11	xxxx	81,296	xxx	95,149	xxxx	949,636	xxx	1,055,864	xxxx
—Rerolled	12	12	xxxx	12,601	xxx	11,461	xxxx	143,633	xxx	142,613	xxxx
—Alloy	24	13	xxxx	167,981	xxx	148,727	20,447	1,788,776	xxx	1,528,673	138,395
—Total	41	14	22,326,160	882,687	46.6	761,465	70,947	9,843,933	44.1	8,442,000	846,386
l Finished Bars—Carbon	24	15	xxxx	125,987	xxx	126,814	xxxx	1,329,095	xxx	1,319,007	xxxx
—Alloy	23	16	xxxx	21,975	xxx	17,805	xxxx	222,751	xxx	197,962	xxxx
—Total	31	17	2,851,510	147,962	61.2	144,619	xxxx	1,551,846	54.4	1,516,969	xxxx
l steel bars	19	18	262,810	8,099	36.4	7,936	xxxx	99,571	37.9	96,391	xxxx
e & Tubes—Butt weld	14	19	2,215,520	107,178	57.1	106,832	xxxx	1,394,541	62.9	1,321,682	xxxx
—Lap weld	9	20	730,200	22,931	37.0	23,966	xxxx	287,098	39.3	305,754	xxxx
—Electric weld	10	21	1,536,900	71,067	54.5	62,161	xxxx	786,373	51.2	675,050	xxxx
—Seamless	13	22	3,169,600	202,171	75.2	178,341	xxxx	2,221,920	70.1	1,954,981	xxxx
—Conduit (cap. & prod. incl. above)	6	23	xxxx	xxxx	xxx	10,052	xxxx	xxxx	xxx	100,969	xxxx
—Mech. tubing (cap. & prod. incl. above)	12	24	xxxx	xxxx	xxx	36,988	xxxx	xxxx	xxx	432,658	xxxx
e rods	26	25	7,295,670	411,281	66.5	83,861	25,813	4,465,194	61.2	1,026,504	346,506
e—Drawn	41	26	5,742,890	354,948	72.9	206,011	9,168	3,587,558	62.5	2,068,716	135,592
—Nails and staples	19	27	1,259,760	70,967	66.5	75,367	xxxx	634,704	50.4	637,429	xxxx
—Barbed and twisted	16	28	543,010	18,939	41.1	19,679	xxxx	209,646	38.6	207,610	xxxx
—Woven wire fence	16	29	1,121,060	31,891	33.6	32,758	xxxx	378,809	33.8	383,230	xxxx
—Bale ties	13	30	149,700	9,521	75.0	9,610	xxxx	95,680	63.9	99,993	xxxx
k Plate—Ordinary	9	31	xxxx	xxxx	xxx	92,111	200	xxxx	xxx	784,346	1,663
—Chemically treated	8	32	465,000	13,619	34.6	12,856	xxxx	129,679	27.9	125,170	xxxx
and Terne Plate—Hot dipped	9	33	3,758,850	149,079	46.8	169,024	xxxx	1,810,236	48.2	1,924,657	xxxx
—Electrolytic	9	34	2,231,850	88,354	46.7	95,602	xxxx	892,941	40.0	909,173	xxxx
ts—Hot rolled	31	35	19,785,320	1,248,891	74.5	608,090	38,759	13,917,916	70.3	*6,377,831	421,198
—Cold rolled	14	36	7,309,460	498,585	80.5	380,826	xxxx	5,545,584	75.9	4,078,951	xxxx
—Galvanized	16	37	2,924,130	113,280	45.7	130,495	xxxx	1,402,426	48.0	1,463,778	xxxx
e—Hot rolled	25	38	7,180,030	241,691	39.7	153,142	18,590	2,512,924	35.0	1,600,988	237,176
—Cold rolled	34	39	3,067,450	120,755	46.4	122,806	xxxx	1,346,429	43.9	1,308,050	xxxx
els (car, rolled steel)	5	40	315,400	25,345	94.8	24,927	xxxx	248,571	78.8	252,656	xxxx
s	6	41	398,170	12,546	37.2	12,868	xxxx	134,360	33.7	130,682	xxxx
other	3	42	169,510	4,223	29.4	485	xxxx	44,674	26.4	6,266	xxxx
TOTAL STEEL PRODUCTS	143	43	xxxx	xxxx	xxx	4,854,207	320,787	xxxx	xxx	53,073,421	4,079,644
ctive steel finishing capacity	143	44	64,648,000	xxxx	xxx	xxxx	xxxx	xxxx	xxx	xxxx	xxxx
ent of shipments to effective finishing capacity	143	45	xxxx	xxxx	xxx	82.7%	xxxx	xxxx	xxx	76.1%	xxxx

djusted.

Fabricators Seek "Divorce" in Steel Negotiations

Metalworking companies which have contracts with USA-CIO protest bargaining on same basis as producers

METALWORKING companies holding contracts with the United Steelworkers of America-CIO have served notice they will resist union attempts "to throw us back in the same basket with basic steel producers" for collective bargaining purposes.

The fabricators, who employ half the steelworkers' union membership, contend their situation differs substantially from that of the basic steel producers and that they should not be compelled to bargain on the same basis. A year ago they fought for and partially won a "divorce" from basic steel. While most of them were forced to grant the same 18½-cent hourly increase forced on the producers, the majority won a point in obtaining contracts which had later expiration dates than those of the producers.

The metalworking companies argue their negotiations with the union should follow those with the basic producers, so they will know what steel price increases are likely to result from any wage adjustments granted by the producers.

The union and producers agreed to a 75-day extension of contracts to April 30. However, the union is balking at granting the fabricators a 75-day extension, which would carry them beyond April 30, which terminal date the union is insisting upon. This means, the fabricators say, that the union is trying to "hamstring and drag us along with Big Steel."

The issue of whether or not metalworking companies should be divorced from the basic industry for collective bargaining purposes has been the subject of considerable testimony before the Senate Labor Committee in recent weeks.

Meanwhile negotiations between the union and the basic steel producers proceed, with frequent recesses and with none of the issues yet resolved.

Blast Furnace & Coke Oven Group Will Meet on Mar. 7

H. W. Johnson, staff assistant to the president, Inland Steel Co., Chicago, will discuss "Blast Furnace Materials and Operations" at the winter meeting of the Eastern States Blast Furnace & Coke Oven Association, to be held at the Roosevelt Hotel, Pittsburgh, March 7. Other papers include: "Stream Pollution, Spent Liquor Disposal, Reclamation and Possible Utilization in Coke Plant Operation" by W. W. Hodge, advisory fellow, Mellon Institute of Industrial Research, Pittsburgh; and "Wages, Prices and Productivity" by Jules Backman, professor of economics, New York University, New York.

FOUNDRY SPEAKERS: Some of the speakers who addressed the 15th annual foundry practice conference of the American Foundrymen's Association at Birmingham Feb. 20 and 21 are shown above. Left to right, they are: John P. Sellas, Michigan Steel Castings Co., Detroit; W. E. Jones, Stockham Pipe Fittings Co., Birmingham, chairman of the conference program committee; W. B. McFerrin, Electro Metallurgical Co., Detroit; F. G. Sefing, International Nickel Co., New York; and L. D. Pridmore, International Molding Machine Co., Chicago

Officers Elected at Hot Dip Galvanizers Meeting

Program of the American Hot Dip Galvanizers Association Inc.'s 12th annual meeting which was held at the Netherland Plaza Hotel, Cincinnati, Feb. 13-14, included among its highlights election of three directors to serve three-year terms and election of officers who will assume their duties Apr. 1. New directors are: I. M. Herrmann, president, Acme Galvanizing Inc., Milwaukee; C. E. Lord, purchasing agent, Thomas Laughlin Co., Portland, Me.; and H. R. Breslau, general manager, Southern Galvanizing Co., Baltimore. The officers for the 1947-48 year are: F. M. Carlson, president, American Tinning & Galvanizing Co., Erie, Pa., president; George Gregory, president, Thomas Gregory Galvanizing Works, Maspeth, N. Y., first vice president; F. W. Miller, contracting engineer, Lehigh Structural Steel Co., Allentown, Pa., second vice president; and Stuart J. Swensson, secretary-treasurer.

Speakers at the annual meeting their subjects were: Richard Rimb editor and publisher, *Corrosion and terial Protection* magazine, Pittsbu "Improved Plant Layout Reduces M rial Handling Costs;" George D. Lain, search engineer, American Iron & S Institute, New York, "Reversal of E trode Potential;" and Commander Th as C. Wallace, USN, Field Operati Branch, Materiel Division, Navy Dep ment, Washington, "New Organizatio Navy Department as to Materiel Mat and an Outline of Policies of the Branc of the Materiel Division."

Screw Machine Products Makers Meet Mar. 19-22

Problems facing the screw mach products industry will be discussed at annual meeting of the National Sc Machine Products Association which be held Mar. 19-22 at the Hotel Cl land, Cleveland.

Among the subjects to be covered be selling techniques, to be discussed Ted Lundberg, NSMPA vice presid and sales manager, Lundberg Sc Products Co., Lansing, Mich.; choo correct cutting fluids, with Ben F. H er speaking; and simplified quality c trol, by George Wentz, NSMPA staff gineer. Howard Coonley, presid American Standards Association, will about industrial standards.

arnegie-Illinois Revises Extra ard for Flat-Rolled Carbon Steel

Follows grade classification for sizes initially announced by American Rolling Mill Co. Slitting, processing, oiling, specification and packaging extras revised. Trend toward greater uniformity of cards noted

EVISIONS and refinements in steel a cards continue to be issued by pro-ers, for clarification and in the direc- of uniformity. Among the latest sions is one by Carnegie-Illinois Steel p. on hot-rolled carbon steel sheets strip which follows the grade classi-ion by sizes of flat-rolled carbon steel ally announced by American Rolling Co. Jan. 29 (STEEL, Feb. 3, p. 67).

arnegie's revised extra on hot-rolled ts incorporates the following major itional changes: Slitting extra for coils merly 25 cents per 100 lb for all es) has been combined with the slit- extras applicable to cut lengths, ch remain unchanged at 25 cents for gage and heavier and 40 cents for gage and lighter.

iling extra, when other than mill dard oils are specified, has been in-ased from 10 to 20 cents. An addi-al processing extra of 15 cents for eaker passing or back coiling" is in-porated in the revised extra card.

paragraph on Rockwell hardness been added to the section covering t treatment extras to the effect that -rolled and hot-rolled pickled sheets ing for Rockwell hardness to a lower imum than B-75 can be accepted only h heat treatment extras or normalizing pply.

The new card points out that the physi- quality extra of 25 cents is in addition he chemical requirement extras neces- to meet these physicals. Specifica- extras have been increased as follows: linary flanged steel, ASTM-A-70 or ivalent, up 20 cents to 35 cents; ordi- fire box steel, ASTM-A-70 or equi-nt, up 25 cents to 45 cents; locomotive ge steel, ASTM-A-30 or equivalent, 25 cents to 50 cents; locomotive fire , ASTM-A-30 or equivalent, up 10 ts to 60 cents.

schedule of packaging extras for s has been incorporated in the re-d extra card. In addition, an extra 2 per coil or coil group is now charged paper wrapping in excess of standard tice. A similar extra is charged for ding hot-rolled non-pickled coils on s or platforms not over 4 in. high and xtra of 5 cents is charged for shroud-

he revisions in hot-rolled strip extras are the same as in hot-rolled sheets for those applying to ordinary and locomotive flange in fire box steel and when specifying other than mill standard oils. A processing extra of 10 cents has been incorporated in the revised card for roller leveling, while an extra for closer tolerances and for machine straightening has been advanced 10 cents to $1 for under one-quarter pound per linear foot.

The paper wrapped extra applicable to cut length in packages under 500 pounds has been increased 20 cents to 25 cents. For single-pile coils less than 3000 pounds and double-pile coils less than 4000 pounds, the packing extra has been advanced from 5 to 15 cents. Paper wrapped or shrouded packaging extras for circles also have been revised, with 5 cents now charged for packages 4000 pounds and over.

Ease Limitations on Merchant Quality Bars

PITTSBURGH

Steel producers continue to recommend a "killed" steel specification for carbon bar sizes over 3 inches, 0.65 per cent carbon and 1.05 per cent manganese. However, some interests no longer are arbitrarily insisting that specifications over these limitations must be ordered silicon "killed." In other words if a customer wants a 3½ or 4-inch round with 0.75 per cent carbon max for a specific end use for which it is shown a "killed" steel classification is not necessary, some steel producers will accept the order on the basis of merchant bar quality standards with the proviso that their responsibility under such conditions is limited and the sale is at the risk of the buyer should

(*Please turn to Page* 205)

Navy Adopts Escalator Clause for Steel Orders To Ease Procurement Difficulties

BECAUSE of the legal red tape with which they continually have to cope, government procurement officers encounter tough going when market conditions tighten. On the one hand they do not have the freedom of private buyers and, on the other, it takes months after they hit on a legally admissible course of procedure before they can get necessary approval.

It has taken the Navy more than four months to get itself out of the trouble in which it found itself all last year because of the unwillingness of steel companies to bid on Navy tonnages under the usual sealed bid arrangement. Confronted with demands much larger than their capacity to produce, steel companies have seen no reason why, in a period of rising costs, they should make commitments without protecting themselves against the possible need for obtaining higher prices. Hence when the Navy last year undertook to examine proposals on definite steel tonnages it would find that there were no bids to be opened. The latest example was the opening, in January, on 1500 tons of concrete reinforcing bars; no bids were received.

This situation now has been improved as a result of approval under which Navy procurement officials are able to pay higher prices on steel than the original contract price when the contractor is able to show that cost increases warrant the higher prices. This is possible under a new escalator clause under which prices may be increased in the event of cost increases, or decreased in the event of decreased costs—but this latter stipulation, of course, has no significance under today's market conditions. In the event of increased costs, the contractor notifies the Navy of the necessary increase in price, whereupon the Navy either cancels the order or gives approval in writing within 10 days. The only limitation is that the increase must not exceed 20 per cent of the total dollar value of the original contract. The clause provides that if the Navy cancels the order rather than absorb the increased prices, the contractor will have 10 days within which to complete and to ship work in process.

At present, it is planned to limit purchases under this arrangement to plain carbon steel products. So far the Navy has had no trouble in filling its alloy steel needs in the usual way by competitive bidding. Altogether it is expected the Navy in the near future will seek to place somewhere between 10,000 and 15,000 tons of carbon steel bars, sheets, strip, shapes, tubing and concrete reinforcing bars.

Army procurement officers also have been authorized to use the escalator clause when necessary in order to obtain necessary steel tonnage, but so far they have not taken advantage of it.

U. S. Moves To Block Consolidated Sal

Clark files antitrust suit charging acquisition of West Coast company by U. S. Steel would eliminate "substantial" competition"

JUSTICE department last week moved to block the proposed acquisition by Columbia Steel Co., United States Steel Corp. subsidiary, of the fabricating business of Consolidated Steel Corp. on the grounds the purchase would violate the Sherman Antitrust Act. Attorney General Tom C. Clark filed suit at Wilmington, Del., asking the sale be enjoined.

The suit charges that the purchase would eliminate "substantial competition" in the sale of rolled steel products and that competition would be greatly reduced between U. S. Steel and its subsidiaries and Consolidated in manufacturing and selling fabricated steel products in western states.

Attorney General Clark in filing the suit declared "the country is in the midst of a corporate merger movement of tremendous significance."

The Justice Department, he said, is examining every proposed corporate merger to determine if it will restrain or monopolize trade. Many of the mergers are lawful, Mr. Clark continued, but "some of them, particularly those involving the acquisition of competitors, raise serious questions under the antitrust laws."

Mr. Clark invited business firms planning mergers or acquisitions to inform the Justice Department of plans in advance and said the department would advise whether litigation would result if the transactions were completed.

United States Steel Corp. denied the acquisition of Consolidated's fabricating assets and business would lessen competition.

"The facts speak for themselves," Benjamin F. Fairless, U. S. Steel president, said.

"Consolidated is a fabricator of steel. Its principal fabricating operations are at Los Angeles and San Francisco. U. S. Steel now has no fabricating plants on the West Coast of the character of those owned by Consolidated. There is no competition of any substance today between Consolidated and Columbia Steel, or between Consolidated and any other U. S. Steel subsidiary.

"The active competitive situation now existing in the steel fabricating field on the Pacific Coast, with some 47 different concerns engaged in this business, would not be changed in any substantial way by the consummation of this transaction. Columbia Steel would merely take the place of Consolidated.

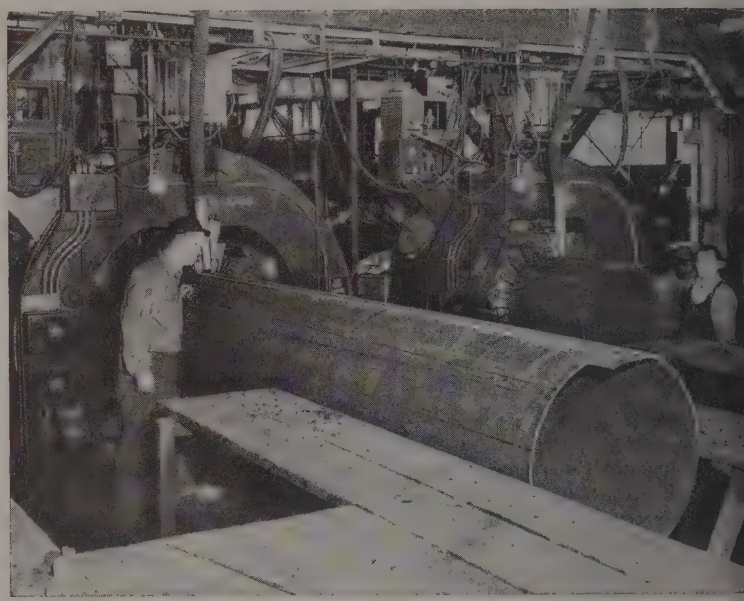
"Such an acquisition of the assets of Consolidated would not increase the steelmaking capacity of U. S. Steel for the simple reason that Consolidated has no steelmaking facilities and does not produce steel.

"Last June, U. S. Steel purchased from the government its large steel mill at Geneva, Utah. Geneva's capacity to manufacture plates and structural steel is in excess of any likely postwar needs for these products in the Far West. Upon acquiring the Geneva plant, it became U. S. Steel's responsibility to seek means to utilize so far as possible these excessive plate and structural steel capacities, and thus permit the Geneva plant to be continued in operation over the years and serve as a source of supply for western users of steel. A natural step toward accomplishing this result is for U. S. Steel to engage in the steel fabricating business on the West Coast, an activity which it has carried on for many years in other parts of the country.

"Consolidated informed U. S. Steel some months ago that its fabrica business was for sale. Such a purc seemed to U. S. Steel to be the lo way to secure an essential outlet plates and structural steel to be duced at Geneva, and thus help in future operation of the Geneva p

"Negotiations with Consolidated such a purchase were commenced October. Last December Columbia announced that it had entered in contract for the purchase of the fabr ing assets and business of Consolida subject to approval by the stockho of Consolidated. A meeting of the s holders of Consolidated was sched to be held on Mar. 3, 1947, to ac this matter."

Federal Judge Richard S. Rod Wilmington, Del., has set Mar. 1 the date for hearing on the governm application to restrain the purchase



GAS LINE: A 30 in. high pressure pipeline is being produced at the Lo Angeles plant of the Consolidated Steel Corp. at the rate of 9 miles week. The pipe will be part of a 1200-mile line through which natural ga will be carried from New Mexico and western Texas to Southern Californi Above the formed pipe is going through the seam welders in which abuttin edges are aligned and welded by the submerged arc process. Wide Worl photo

Ford To Quadruple West Coast Purchases

Ford Motor Co.'s decision to quadr its parts purchases in California motivated by the substantial savings

n be realized through such a program, Ford officials explained to West ast manufacturers in a series of meetgs in leading Pacific industrial centers. Although the parts can be manufacred more cheaply in the East, their cost livered to the West Coast runs apoximately 5 per cent higher. The new ight rates will heighten the advante that West Coast fabricators will en in their area.

Ford now is buying about $15 million parts annually in California and the w program will boost purchases to at ast $65 million. This may climb to more an $90 million annually when the Lin-ln-Mercury assembly plant in Los Anles gets into full production.

Ernest R. Breech, executive vice presint, said the new plant should produce out 850 cars and trucks a day.

The Ford mission, headed by Henry ord II, president, includes A. J. Brown, vice president and director of purasing; Mr. Breech; John R. Davis, vice esident and director of sales and advering.

Seventeen chief purchasing agents and uyers are now in California, 13,000 sets blueprints have been sent to industrial eas in the state and the Ford mission rries an exhibit of 2600 parts, manucture of which the company hopes to rm out in California.

Vestinghouse Leases oshua Hendy Plant

SAN FRANCISCO

Westinghouse Electric Corp. has taken 10-year lease with option to buy on the lant of Joshua Hendy Iron Works here. he 57-acre plant, one of the largest eavy machinery plants in the West, will e placed in the Westinghouse maintenice and repair division.

Terms of the lease and the price, if the tion is exercised, were not revealed.

Expansion of Westinghouse West Coast cilities was made necessary by the owing volume of industrial marine and ntral station business of the area, cording to Charles A. Dostal, vice esident in charge of Westinghouse cific division.

Joshua Hendy will now concentrate erations in the Torrance plant near Los ngeles and at its Crocker-Wheeler Divion works at Ampere, N. J.

At the time the agreement was reached, shua Hendy employed 1100 men and as using only a part of its 1,000,000 ft of space.

Mr. Dostal estimated that Westinguse would employ about 2500 when e production changeover is made. Anher official stated that the company pes eventually to reach the peak warne employment figure, when Hendy rried 7500 on the payroll.

Arguments Rage Over Freight Rate Reductions from Geneva to Coast

California consumers endorse action by western railroads and ask Interstate Commerce Commission to deny petition by competing producers to nullify lower tariffs. Carriers explain reasons for ordering reductions

CONTROVERSY over the proposed reduction in freight rates on steel shipments from Geneva, Utah, to the West Coast consuming centers continues to reverberate from Los Angeles to Washington and New York.

Nine competing steel producers have protested the reduction in rates, which, they contend, would give the United States Steel Corp.'s Geneva plant a substantial competitive advantage. The objectors include: Fontana Steel Co., Fontana, Calif.; Bethlehem Steel Co., Bethlehem, Pa.; Bethlehem Pacific Coast Steel Corp., Los Angeles; Jones & Laughlin Steel Corp., Pittsburgh; Weirton Steel Co., Weirton, W. Va.; Republic Steel Corp., Cleveland; Colorado Fuel & Iron Corp., Denver; Sheffield Steel Corp., Kansas City, Mo.; and Youngstown Sheet & Tube Co., Youngstown. The producers have asked the Interstate Commerce Commission to suspend the proposed rate reduction and to institute an investigation of the rate structure.

California Manufacturers Association is supporting the proposed reduction and is urging the ICC to deny the petition for nullification of the rate cut.

The proposed action by four railroads, the Western Pacific, Union Pacific, Denver & Rio Grande and Great Western, would cut freight on finished steel from Geneva to Los Angeles, San Francisco and Portland, Oreg., from 70 cents per 100 lb to 48 cents, and to Seattle from 76 cents to 54 cents.

Announcement of the proposed reduction followed by 10 days the general advance in freight rates of slightly more than 17 per cent.

Henry J. Kaiser of Fontana Steel, chief opponent of the proposed reduction, charges the action is discriminatory against Fontana. While the general freight rate increase will add $600,000 annually to Fontana shipping costs, the proposed reduction from Geneva to the West Coast will lower Geneva Steel's freight bill by $1,200,000, according to Kaiser. Benjamin F. Fairless, president, United States Steel, replied the savings effected by the reduction would be passed on to West Coast consumers.

K. T. Norris, president of the California Manufacturers Association, welcomed the Fairless statement and endorsed the proposed Geneva to West Coast reductions.

"Establishment of steel facilities in this area is meaningless unless savings in costs to consumers result. Realistic freight rates such as those approved by the railroads serving Geneva and Coast points represent a goal long sought by California industry."

Early Balance of Steel Supply, Demand Expected if Present Output Continues

IF present steel operations can be maintained for a few months more, supplies of steel soon will balance if not exceed demand. This is the thinking of a considerable portion of the steel industry, George S. Rose, secretary, American Iron & Steel Institute, said in New York last week.

Mr. Rose saw little cause for substantial increases in steelmaking capacity.

Speaking before the American Institute of Bolt, Nut & Rivet Manufacturers, Mr. Rose said that while there have been cases of apparent hardship among steel users due to inability to obtain sufficient supplies, the fact must not be overlooked that during 1946 the strike of the steelworkers and the two strikes of the coal miners caused heavy losses.

Mr. Rose presented figures showing consumers in many major lines are now actually receiving more steel than in the prewar year of 1940. With respect to the bolt and nut industry, he said it received in 1940 about 1.5 per cent of total finished steel shipments, whereas during the first 11 months of 1946 it received 2.1 per cent.

"Steel is not ashamed of its production and distribution record," Mr. Rose said. "We are confident that with the continued high operations it won't be long before your buyers will be locking the door to steel salesmen—it will be your turn to avoid the peddlers who have been avoiding you."

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEE*

Indications are few federal departments will escape the economy axe being sharpened in Congress. Labor budget appears due for terrific beating with virtual elimination of some of the department's major activities possible

EARS OF THE CAPITAL continue directed toward the Hill where Congress studies all the possibilities for reducing federal expenditures. Few departments are going to escape the economy axe, and numerous agencies are due for extinction.

First of the department programs to approach final dimensions is that involving Labor. If present plans of a House appropriations subcommittee carry, the labor budget is due for a terrific beating. The subcommittee is considering virtual elimination of some of the Labor Department's principal activities, including the Division of Labor Standards and the Women's Bureau. Also, the subcommittee virtually has agreed to recommend substantial cuts for the U. S. Conciliation Service, the U. S. Employment Service, the Wage & Hour Division, the Bureau of Labor Statistics and the Apprentice Training program.

Details as to where the economy lightning will strike remain to be worked out. But in the meantime, at least some department and agency heads are trying to improve their position by ordering economies to which they can point when it is their turn to tell their stories on the Hill. Secretary Krug of the Interior Department is abandoning some of the requests which were put in the interior budget last year for fiscal 1948. He will not ask Congress, for instance, to authorize the proposed irrigation development in the Nueces River basin in Texas, because costs would be too high under today's conditions. At today's prices it would cost $81,500,000 to carry out this project, a 64 per cent increase over the 1940 estimate of $49,559,000.

Conciliation Staff Enlarged

IN PREPARATION for another wave of strikes—which he hopes will not materialize—Edgar L. Warren, director, United States Conciliation Service, has added a panel of 26 "blue ribbon" conciliators to his regular staff of 275 full-time conciliators.

Those whose names are well known to the metals producing and metalworking industries include William H. Davis, James Dewey, Nathan P. Feinsinger, Lloyd K. Garrison, Frank P. Graham, Frederick H. Harbison, William Hepburn, William S. Hopkins, Joseph Keenan, William M. Leiserson, Edward F. McGrady, Arthur S. Meyer, Ralph T. Seward, Harry Schulman, William E. Simkin, George Taylor, David A. Wolff.

Mr. Seward at present is serving as umpire for General Motors Corp. and the UAW-CIO, Mr. Schulman is the umpire for the Ford Motor Co. and the UAW-CIO.

Union Spokesmen Not So Hot

LABOR LEADERS appearing before the Senate Labor & Public Welfare committee are doing a very poor "public relations" job for themselves and their cause. Poorly received, for instance, was the offer by Philip Murray, CIO head, to meet AFL President Green in a session with the committee in order to work out an agreement to end jurisdictional labor disputes. There was general committee agreement with Chairman Taft's opinion such a three-cornered arrangement was not the way to do business as far as the committee is concerned. The arbitrary views of the labor leaders in opposing all legislative suggestions did not set well.

It is well known on the Hill that the present lack of major labor trouble is not due to any moderation in the attitude of the union leaders. The latter continue to condition their followings for possible stormy times ahead. A good example is the inflammatory material in the *CIO News* which continues to accuse "the rich monopolies" of holding up production "to beat down their workers and to extort maximum profits," and of having recently "robbed the American people of billions of dollars through exorbitantly increased prices." The *News*, quoting many headlines and editorials, is accusing the press of the nation with serving the "rich"; "the press of the nation is yowling for labor's blood, obeying its master's voice; today the dollar controls the press—only the wealthy can enjoy its vaunted freedom." The latest issue of the *News* has a two-page center spread purporting to show how "Mr. Rich Beats the Tax Law." It purports to show how a man with income of $236,000 in 1946 theoretically might have taken deductions reducing his tax rate to 16 per cent whereas "his $20 a week clerk has to pay at the rate of over 17 per cent."

FROZEN DOLLARS

THOUSANDS of wartime "dollar-a-year" executives have not collected their "salaries" from the government, it was developed last week as the administration began to comb the various wartime laws with a view to determining which should be repealed in line with President Truman's plan to end the war emergency no later than July.

Employment of "dollar-a-year" personnel was authorized by the act of 1940. The Treasury Department reports thousands of these top-drawer executives never have cashed their $1 checks, but instead have had them framed as a memento of the service they rendered their government. As a result the Treasury has had to freeze a sum of money equal to the amount of these checks outstanding.

Welfare Plans Unchanged

REPUBLICAN leaders intend to lea health and welfare legislation to the s ond session of the 80th Congress, start next January. Introduction of S. 545, Taft-Ball-Smith national health bill, Feb. 11, reflects no change in this pl The three proponents thought it a g idea to introduce the bill and have printed at this time so interested part may study it and prepare recommen tions. S. 545 has been referred to Senate Labor & Public Welfare Comm tee which, following conclusion of its forts in connnection with labor legi tion, will consider the health bill in exe tive session.

Industry Mobilization Plans

NOT A WEEK goes by without sc move in Washington to denote the att tion that is being paid to need for qu and effective mobilization of industry event of another war. Latest developm in this connection is completion of organization of the Industrial Mobiliza Committee of the Navy Industrial A ciation. Heads of the committee Chairman, Thomas P. Archer, vice p dent, General Motors Corp.; vice ch man, H. Struve Hensel of the law firm Carter, Ledyard & Milburn, New Y The committee handles all the asso tion's policy matters relating to indus mobilization. The industries and a ities represented are:

Aviation, J. Carlton Ward Jr., p dent, Fairchild Engine & Airplane C chemical industry, Charles S. Mun president, Air Reduction Co. Inc.,

It is reported that . . . . . .

Danielson Mfg. Co. of Danielson, Conn., is making a soft hammerhead of nylon that won't chip or bounce.

get ready with CONE for tomorrow

Windshield glass can be kept warm when coated with an electrically conductive transparent film called "Nesa", manufactured by Pittsburgh Plate Glass Co.

be ready with CONE for today

Eastman Kodak's process of molding small lenses in an atmosphere of nitrogen promises, when manufacturing technique is refined, to produce lenses satisfactory for all but the most critical uses.

get ready with CONE for tomorrow

General Electric's new silicone paint is said to permit clearer, brighter colors for automobiles, refrigerators, electric ranges, etc., and to "last a lifetime."

be ready with CONE for today

Air Reduction Co. claims to have perfected a method of flame-cutting stainless steel to close tolerances at high speed without affecting the physical properties of the metal.

get ready with CONE for tomorrow

American Cyanamid Co. has installed hot water pipes under 600 feet of roadway connecting its plant with the highway. The heat will keep the road free from ice and snow.

be ready with CONE for today

The Mellon Institute has reported on the use of ethylsilicate as a vehicle in paint. Finishes made with it are said to resist heat, retard fire and not to darken with age.

get ready with CONE for tomorrow

C. G. Conn Ltd. has an electronic organ that produces its tones by vacuum tubes and is said to be equivalent to an organ with 1,333 pipes.

Bell Aircraft Corp. is making a vending machine mechanism that makes change.

be ready with CONE for today

The Dobeckmun Co. of Cleveland is making an aluminum foil yarn, protected by a plastic surface from corrosion, for use in textiles in combination with other yarns.

get ready with CONE for tomorrow

Seal Peel Inc., of Detroit, is sending a shipment of various products, protected only by plastic dip coating, on a round-the-world flight to test the value of this type of packaging in actual service.

be ready with CONE for today

Dow Chemical Company's "Styrofoam" is a pure white cellular insulating material with only 18% of the weight of cork.

Atlas Supply Co., makers of tires and accessories, is showing its wares in a showroom built inside a DC4 and called the "Sky Merchant."

get ready with CONE for tomorrow

Linde Air Products Co. calls its method of flame-cutting rock (as for oil wells) "fusion-piercing." It is said to have drilled holes as deep as 450 feet at an average rate of 10 feet per hour.

be ready with CONE for today

The "Solexol cold fractionation" process developed by M. W. Kellog Co. is expected to be used in seven plants now building throughout the world. The process resembles that used for petroleum, but is applied to many basic oils and fats including soy bean, linseed, tallow, sardine and shark liver.

get ready with CONE for tomorrow

The R.C.A. electronic color television system will be made available to the entire industry.

FOLLOW THESE PAGES FOR NEWS OF PROGRESSIVE PRODUCTION

LOYALTY COMMISSION: President Truman meets with his commission on employee loyalty. Members are, seated, left to right: Kenneth C. Royall, Under Secretary of War; President Truman; A. Devitt Vanech, special assistant to the Attorney General, and chairman of the commission. Standing: Harry B. Mitchell, Civil Service Commission; John L. Sullivan, Under Secretary of Navy; John E. Peurifoy, acting Assistant Secretary of State; Edward H. Foley Jr., Assistant Secretary of Treasury. NEA photo

Bromwell Ault, vice president, Interchemical Corp.; general, Mr. Hensel; glass, fiber and insulating material, Harold Boeschenstein, president, Owens-Corning Fiberglass Corp.; industrial and construction machinery, Walter Geist, president, Allis-Chalmers Mfg. Co.; iron and steel, H. G. Batcheller, president, Allegheny Ludlum Steel Corp.; lumber and lumber products, Walter P. Paepcke, president, Container Corp. of America; ordnance, Mr. Archer; petroleum products, E. E. Puryear, assistant to chairman, the Texas Co.; public relations, R. G. Creviston, director, public relations, Crane Co.; radio and electronics, Frank M. Folsom, executive vice president, Radio Corp. of America, RCA Victor Division; rubber, James J. Newman, vice president, the B. F. Goodrich Co.; shipbuilding, William H. Collins, vice president, Bethlehem Steel Co.

Army Week Is Planned

THIS YEAR, for the first time, the War Department has expanded traditional Army Day observance to a full week. Observance has been set for April 7 while Army Week will stretch through the week beginning April 6. Attention will be directed to the whole plan of national security. Ground Forces and Air Forces will put on demonstrations and exhibits in all parts of the country.

Many industrial companies will contribute through advertising and radio programs. Of special interest from an industrial point of view will be emphasis to be placed on the War Department's research and development program, in which so many manufacturing organizations are participating.

Companies desirous of obtaining specific information about how to help make Army Week effective by cooperating with the services should write to Maj. Gen. F. L. Parks, chief, Public Relations Division, War Department, Washington 25.

Bulletin Digests Labor Laws

"FEDERAL Labor Laws and Agencies" is the title of Bulletin 79 of the Division of Labor Standards, Labor Department, which digests basic federal labor laws and states services rendered by the federal labor agencies. The laws summarized include the Social Security Act, the Railway Labor Act, the Fair Labor Standards Act and the National Labor Relations Act.

The bulletin is intended as a guide to union shop stewards and management supervisors to help them know the laws and agencies. Wider distribution of such information, the department hopes, will hold plant grievances to minimum, render unnecessary many appeals to su agencies as the United States Concil tion Service, and cut down litigati

January Employment Down

NUMBER of employees in nonag cultural establishments declined seas ally by 1,138,000 in January to 39,65 000, according to the Bureau of Lab Statistics. The decline is of the sa magnitude as at the same time in pre ous years. Manufacturing showed o a slight drop compared with the us sizable reduction in January. Larg increase in employment in manufactur was iron and steel which added 36,0 wage and salaried workers. This g resulted largely from expanded blast f nace operations following the coal stri

"This gain," says the bureau, "whi offset much of the seasonal declines other manufacturing industries, indica further expansion in the metal fabric ing industries."

The automobile industry reported 28,000 reduction in employment due taking of inventories, model chan overs and material shortages.

Harmony in Washington

AN ILLUSTRATION of the relati harmony which characterizes relations Congress and the administration is action of the Bureau of the Budget reducing personnel ceiling for the Ap May-June quarter by 73,444. This w leave the number of federal employe at the high level of 2,114,276, but reduction shows effort to co-operate w the economy-minded Congress.

Another example is President Truma intimation he hopes soon to declare end to emergencies declared during war; planning a proclamation to that fect no later than July. The administ tion is combing all wartime statutes a the President has recommended rep of 24 wartime emergency laws.

Finland To Get Steel

CONSIDERABLE iron and steel se manufactures and other heavy goods be exported to Finland under terms o trade agreement between that coun and the economic union of Belgiu Luxemburg, according to advices to Department of Commerce. Under agreement Belgium will export iron steel semi-manufactures amounting 60,000 metric tons, valued at 300 mil francs; machinery and apparatus valu at 50 million francs; iron and steel pr ucts, 35 million francs; electric machi and apparatus, including telephone equ ment, 10 million francs; automobile pe and accessories, 10 million francs.

ECENT freight rate increases have mposed an estimated burden of 360 to $65 million on the steel ıcing industry. United States Steel . and Bethlehem Steel Co. figure direct increases in transportation will be $20 million and between $8 $9 million, respectively. These esti- s do not include indirect increases h will result in higher prices for ma- s and equipment purchased.

ıe new increases, which became tive Jan. 1, superseded the interim ases established July 1, 1946. In ial Classification territory (roughly of the Mississippi and north of the and Potomac rivers, the increase ınted on manufactured iron and steel) per cent, subject to a maximum in- e of 10 cents a hundred pounds. On ron, the carload increase was 20 per subject to a maximum of $2 a ton. ıe less carload increases on iron and products varies from 25 per cent in Official territory to 22½ per cent een Official territory and points in territories and 20 per cent for appli- n within and between territories than Official. The increases are ied against the June 30, 1946, basic , the interim boost of about 6.5 per being canceled. Except for the emer- y increase of July 1, 1946, there had no change in the rate structure since outbreak of war in Europe in 1939.

ı increase of 12 cents was ordered on ore, gross or net as rated, except on

NEW FREIGHT RATES

. . . And How They Affect Steel Shipments

By B. K. PRICE

Eastern Editor, STEEL

rates to the upper lake ports, or handling charges to those ports. Scrap was given a boost of 20 per cent, subject to a maximum of $2 a ton, while coal was given flat increases, varying with basic rates. Thus rail freight rates on coal were advanced as follows: Fifteen cents per net ton and 17 cents per gross when the rate is $1 or less; 25 and 28 cents per net and gross ton, respectively, when the rate is $1 to $2.25; and 30 and 34 cents, respectively, when the rate is more than $2.25.

The basic freight increases on all traffic average 17.6 per cent, against an average of 19.6 requested by the carriers. Originally, the railroads had asked for a general hike of 25 per cent, but numerous exceptions specified lesser increases on particular products. Actually, under the new schedules, the increase for the eastern railroads amounted to approximately 17.9 per cent while that for carriers elsewhere amounted to 17.4 per cent.

Percentage method of increasing rates has accentuated considerably freight absorption by mills on shipments scheduled for the more distant points; hence this method is contributing to the present trend among producers toward diverting a greater share of their output to customers nearer home.

With demand well in excess of supply, this trend began some time ago, and likely will continue for at least as long as this pressure for steel lasts. However, this whole trend still is in a state of flux, with producers feeling their way and not committing themselves too definitely as to policy, and with much depending upon the particular products involved.

Naturally, consumers in the more remote areas most affected by this trend are those whose mill relationships have not been close. During the war and in

New, Old, Interim Steel Freight Rates To Eastern Points

(Carload rates, cents per 100 lb, subject to 3 per cent federal tax)

	Pittsburgh			Buffalo			Bethlehem			Coatesville			Sparrows Point			Cleveland			Weirton			Youngstown		
	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old	Int.	New
York																								
mira	28	32	34	21	23	25	24	26	29	26	29	31	27	30	32	31	35	37	28	32	34	29	33	35
chester	29	33	35	18	15	16	29	33	35	31	35	37	32	36	38	26	29	31	29	33	35	26	29	31
nenectady	37	41	44	28	32	34	24	26	29	28	32	34	31	35	37	37	41	44	37	41	44	36	40	44
racuse	33	37	40	21	23	25	26	29	31	29	33	35	32	36	38	31	35	37	33	37	40	30	34	36
ica	35	39	42	24	26	29	26	29	31	30	34	36	33	37	40	33	37	40	35	39	42	33	37	40
nkers	36	40	43	34	38	41	20	22	24	22	24	26	26	29	31	41	45	49	36	40	43	39	43	47
w York	36	40	43	34	38	41	17	19	20	20	22	24	24	26	29	41	45	49	36	40	43	39	43	47
pany	21	23	25	18	20	22	..	..	..	..	..	..	..	..	..	37	41	44	37	41	44	37	41	44
Jersey																								
wark	36	40	43	34	38	41	15	17	18	20	20	24	24	26	29	41	45	49	36	40	43	39	43	49
enton	23	25	28	21	23	25	9½	10½	11	11½	13	14	13	15	16	40	44	48	33	37	40	36	40	43
ecticut																								
dgeport	40	44	48	35	39	42	23	25	28	24	26	29	28	32	34	..	..	..	..	..	..	..	..	..
w Britain	41	45	49	35	39	42	23	25	28	27	30	32	31	35	37	..	..	..	..	..	..	..	..	..
w Haven	40	40	48	35	39	42	24	26	29	25	28	30	29	33	35	..	..	..	..	..	..	..	..	..
aterbury	40	40	48	34	38	41	24	26	29	26	29	31	30	34	36	..	..	..	..	..	..	..	..	..
achusetts																								
ston	44	49	53	37	41	44	31	35	37	33	37	40	36	40	43	44	49	53	44	49	53	44	49	53
ingfield	42	47	50	34	38	41	27	30	32	29	33	35	32	36	38	42	47	50	42	47	50	41	45	49
rcester	43	48	52	36	40	43	29	33	35	31	35	37	34	38	41	43	48	52	43	48	52	43	48	52
land																								
ltimore	30	34	36	34	38	41	21	23	25	16	18	19	4¼	4.7	5	36	40	43	30	34	36	33	37	40
vare																								
lmington	32	36	38	35	39	41	15	17	18	8	8.9	9½	13	15	16	39	43	47	32	36	38	35	39	42
sylvania																								
ester	32	36	38	35	39	42	14	16	17	8	8.9	9½	15	17	18	39	43	47	32	36	38	35	39	42
der	9½	10½	11	29	33	35	32	36	38	31	35	37	31	35	37	20	22	24	15	17	18	11½	13	14
e	21	23	25	16	18	19	34	38	41	35	39	42	35	39	42	17	19	20	22	24	26	16	18	19
nstown	15	17	18	26	29	31	28	32	34	26	29	31	27	30	32	24	26	29	19	21	23	21	23	25
la.	32	36	38	34	38	41	11½	13	14	9½	10½	11	17	19	20	37	41	47	32	36	38	35	39	42
ding	30	34	36	32	36	38	9	10	11	9½	10½	11	19	21	23	36	40	43	30	34	36	33	37	40
anton	30	34	36	27	30	32	18	20	22	21	23	25	25	28	30	35	39	42	30	34	36	33	37	40
k	28	32	34	31	35	37	18	20	22	11½	13	14	11½	13	14	35	39	42	28	32	34	31	35	37
vidence	44	49	53	39	43	47	30	34	36	31	35	37	35	39	42	44	49	53	44	49	53	44	49	53

the period directly following, many buyers, under government regulations, were provided with steel from mills they had never done business with before the war; a number, in fact, were not even in existence at that time. It is these who are hardest hit by various producers in their withdrawal from remote areas. Many consumers are still willing to bear the extra freight, and, accordingly, are getting steel in some cases. However, regardless of consumers' willingness in this respect, producers are disposed to strengthen positions nearer their own plants and especially where old-time customers are involved.

Reflecting the effects of the new rates, Pittsburgh mills, for instance with an increase in their carload rates from 36 to 43 cents, have to absorb an extra 4 cents on Bethlehem-based shapes into New York City, the Bethlehem freight having been increased only from 17 to 20 cents. However, Pittsburgh producers suffered no handicap on Buffalo-based products into New York city, notably certain sheet and bar items, the rates from both points being increased 2 cents per 100 lb, but into Boston they are penalized 2 cents on Buffalo-based products and 1 cent on Bethlehem based steel.

Pittsburgh Producers Penalized

At Philadelphia, Pittsburgh producers are penalized by the new rates to the extent of 3.5 cents per 100 lbs on shapes from Bethlehem and 3 cents on certain grades of sheets from Sparrows Point, Md.; also for the present at least on plates, as the basing point prices nearer Philadelphia are on a higher level, Pittsburgh, in competition with Bethlehem-based steel, suffers a 4 cent handicap at Reading, Pa., and a 2 cent handicap at Baltimore.

Pittsburgh, Detroit, Weirton and Youngstown now are experiencing a 1 cent penalty on Cleveland-based products into Columbus, although at least Pittsburgh and Weirton and also Detroit and Chicago-Gary hold their own on Cleveland-based steel into Dayton. Chicago-Gary and Pittsburgh lose a cent on Cleveland-based products into Cincinnati.

Into Flint, Mich., on Detroit-based products, Pittsburgh is handicapped 3.25 cents under the new schedules and Chicago-Gary and Cleveland, 2.25 cents. Detroit loses out by 2 cents on Chicago and Gary-based products into South Bend, Ind., and Pittsburgh by 4 cents. Bethlehem and Pittsburgh suffer a penalty of 5 cents on Chicago-Gary-based products into Rockford, Ill.

Carload rates on steel for shipment outside Official Classification territory were advanced 20 per cent, subject to the 10 cents per 100 lb maximum. The only variance, as indicated above, was in the less-than-carload rates.

How the increase affected some typical rates is illustrated by the following rates from Birmingham, Ala., to southern consuming points (carload rates, cents per 100 lb, subject to 3 per cent federal tax):

	Old (Before July 1, 1946)	New
Memphis, Tenn.	67	77
New Orleans	75	85
Charlotte, N. C.	45	54
Atlanta, Ga.	62	72
Jacksonville, Fla.	62	72
Tampa, Fla.	84	94
Houston, Tex.	75	85
Little Rock, Ark.	88	98
Tulsa, Okla.	96	106
Shreveport, La.	96	106
Columbia, S. C.	50	60

Changes on shipments from within Official Classification territory to other territories are illustrated by the following rates from Sparrows Point, Md., to southern consuming centers (carload rates, cents per 100 lb, subject to 3 per cent federal tax):

	Old (Before July 1, 1946)	New
Memphis, Tenn.	31	37
New Orleans	37	44
Charlotte, N. C.	43	52
Atlanta, Ga.	24	29
Jacksonville, Fla.	44	53
Tampa, Fla.	50	60
Houston, Tex.	43	52
Dallas, Tex.	75	85
Little Rock, Ark.	53	63
Tulsa, Okla.	75	85
Shreveport, La.	52	62
Columbia, S. C.	41	49

Combination rail and water rates and export rates were increased correspondingly, although in connection with latter a study is being made so as to establish old port relationships, with likelihood that new schedules may be nounced around Apr. 1.

Arbitrary delivered prices to Det have been established by steel ducers at 15 cents over the basing poi To eastern Michigan, arbitrary delive prices are 20 cents over basing poi Before July 1, 1946, delivered price Detroit were 10 cents above ba points and to eastern Michigan they 15 cents above basing points. Under interim schedule from July 1 to Jan arbitrary delivered prices to Detroit 13½ cents above basing points an eastern Michigan, 18½ cents.

Set $6 Rate on Pig Iron From Texas to Alabama

BIRMINGH

The Southwestern Freight Bureau the Southern Freight Bureau have proved a short term publication rate of $6 a ton on pig iron in car lots from Houston, Tex., to Birmingh Anniston, Atalla, Bessemer and Holt,

The request for short notice pu ation was made by Sheffield Steel in Texas. It indicated an immed movement of pig iron from Texa relieve a critical shortage in the Birm ham district, where an additional 50 tons of pig iron a month are needed.

New, Old and Interim Freight Rate

(Carload rates, cents p

	Pittsburgh			Buffalo			Bethlehem			Co
	Old	Int.	New	Old	Int.	New	Old	Int.	New	Old
Ohio										
Akron	19	21	23	25	28	30	37	41	44	36
Columbus	23	25	28	30	34	36	40	44	48	39
Canton	18	20	22	25	28	30	36	40	43	35
Cincinnati	29	33	35	35	39	36	43	48	52	42
Dayton	27	30	32	33	37	40	42	47	50	42
Hamilton	29	33	35	34	38	41	43	48	52	43
Lima	27	30	32	31	35	37	42	47	50	42
Toledo	26	29	31	29	33	35	42	47	50	41
Indiana										
Evansville	40	44	48	43	48	52	51	57	61	50
Ft. Wayne	30	34	36	33	37	40	44	49	53	43
Indianapolis	33	37	40	37	41	44	46	51	55	45
S. Bend	33	37	40	35	39	42	46	51	55	45
Kentucky										
Louisville	36	40	43	41	45	49	47	53	56	46
Michigan										
Bay City	35	39	42	29	33	35	43	48	52	44
Kalamazoo	33	37	40	33	37	40	46	51	55	45
Pontiac	30	34	36	26	29	31	42	47	50	43
Flint	31	35	37	27	30	32	42	47	50	43
Detroit	29	33	35	26	29	31	42	47	50	43
Illinois										
E. St. Louis	43	48	52	45	50	54	54	60	64	53
Elgin	39	43	47	40	44	48	50	56	60	50
Galesburg	42	47	50	44	49	53	54	60	64	53
Joliet	37	41	44	39	43	47	48	54	58	48
Rockford	41	45	49	42	47	50	52	58	62	51
*W. Va.										
Charleston	29	33	..	37	41	..	40	44	..	39
Huntington	28	32	..	36	40	..	41	45	..	40
Parkersburg	21	23	..	32	36	..	36	40	..	35
Wheeling	11½	13	..	28	32	..	34	38	..	33
*Wisconsin										
Manitowoc	41	45	..	39	43	..	50	56	..	51
Racine	40	44	..	40	44	..	51	57	..	50
Kenosha	40	44	..	40	44	..	51	57	..	50
Milwaukee	40	44	..	39	43	..	50	56	..	50
Oshkosh	42	47	..	41	45	..	52	58	..	53
Waukesha	41	45	..	40	44	..	51	57	..	51
Iowa										
Bettendorf	43	..	52	44	49	53	54	60	64	53
Davenport	43	..	52	44	49	53	54	60	64	53
Dubuque	43	..	52	44	49	53	55	61	65	54
Keokuk	44	..	53	46	51	55	56	62	66	55

* Latest I.C.C. rates not approved by state.

alian Steel and Metalworking ndustries Beset by Shortages

Country lacks iron and coal. Steel production insufficient to meet industrial and reconstruction needs. Hydroelectric systems falter under burden of severe weather and lack of maintenance. American coal strike reduces imports of fuel

ROME

TALY'S steel and metalworking indus- is beset by many difficulties. The ıtry has no supplies of iron of its . Most of the coal used must be im- ed. Scrap iron reserves are inade- te for present needs.

emand for steel is urgent from every ıstry in Italy. Metalworking factories attempting increases in output and are ıoring for more metal. Substantial ıages are also needed for reconstruc- work. Railroads need bridges and ng stock. Needs by the hydroelectric er systems are desperate.

aly also faces considerable demand n abroad. Exports of iron and steel forbidden, but machinery may be orted and orders are pouring in from y side, including France, South Amer- Spain, Sweden, Switzerland and Tur-

espite difficulties, the Italian steel industry has made a creditable showing since the war. Throughout 1946, monthly output showed a steady gain. In January, 1946, only 50,000 tons of steel were produced. By October, output had reached 134,000 tons, or at about 60 per cent of 1939 monthly production. Total steel output for 1946 is estimated at 1,100,000 tons, compared with 395,000 tons in 1945.

Pig iron production was less encouraging, although it gained from 62,000 tons in 1945 to 175,000 tons in 1946. Iron output reached a peak of 28,000 tons in July and then diminished.

During 1946, Italian steelmakers were hopeful that they would reach prewar production levels during 1947. However, toward the end of 1946 several developments dealt a serious blow to these expectations. The coal strike in America reduced coal shipments from that country which accounts for about two-thirds of Italy's supply. Italy needs about 900,000 tons monthly, but currently is receiving only about 600,000 tons. Even with these minimum supplies unusually severe winter played havoc with every activity in the country. Everyone turned to electric power and the hydroelectric system, which already was wobbling, could not stand the strain and drastic curtailment in power consumption had to be enforced. Factories found their power supply equal only to 50 per cent of their requirements.

l to Midwestern Consuming Centers

3 per cent federal tax)

Point lew	C—G Old	C—G Int.	C—G New	Cleveland Old	Cleveland Int.	Cleveland New	Detroit Old	Detroit Int.	Detroit New	Weirton Old	Weirton Int.	Weirton New	Youngstown Old	Youngstown Int.	Youngstown New
2	32	36	38	8	8.9	9½	23	25	28	17	19	20	11	13	13
4	29	33	35	20	22	24	23	25	28	23	25	28	23	25	28
2	32	36	38	11½	13	14	24	26	29	13	15	16	11	13	13
9	28	32	34	26	29	31	27	30	32	29	33	35	29	33	35
8	26	29	31	23	25	28	24	26	29	27	30	32	26	29	31
9	27	30	32	25	25	30	26	29	31	29	33	35	28	32	34
9	24	26	29	21	23	25	20	22	24	27	30	32	24	26	29
8	26	29	31	19	21	23	11½	13	14	26	29	31	23	25	28
8	26 (Gary)	29	31	36	40	43	36	40	43	40	44	48	40	44	48
2	18	20	22	23	25	28	21	23	25	40	44	48	26	29	31
3	20	22	24	29	33	35	28	32	34	33	37	40	31	35	37
4	14 (C-G)	16	17	27	30	32	23	25	28	33	37	40	30	34	36
4	27	30	32	32	36	38	32	36	38	36	40	43	35	39	42
4	30	34	36	29	33	35	20	22	24	35	39	42	32	36	38
4	20	22	24	26	29	31	21	23	25	33	37	40	30	34	36
2	28	32	34	23	25	28	7	7.9	9	30	34	36	27	30	32
3	26	29	31	24	26	29	12¼	14	15	31	35	37	28	32	34
50	28	32	34	22	24	26	..	..	..	29	33	35	25	28	30
2	24	26	29	40	44	48	37	41	44	43	48	52	42	47	50
8	9	10	11	33	37	40	30	34	36	39	43	47	36	40	43
2	19	21	23	37	41	44	35	39	42	42	47	50	40	44	48
6	9	10	11	31	35	37	28	32	34	37	41	44	40	44	48
1	13	15	16	35	39	42	32	36	38	41	45	49	39	43	47
.	37	41	..	29	33	..	32	36	..	29	33	..	29	33	..
.	35	39	..	28	32	..	30	34	..	28	32	..	28	32	..
.	35	39	..	24	26	..	29	33	..	19	21	..	24	26	..
.	36	40	..	20	22	..	28	32	..	7	7.9	..	19	21	..
.	22	24	..	36	40	..	29	33	..	41	45	..	39	43	..
.	13	15	..	34	38	..	29	33	..	40	44	..	37	41	..
.	13	15	..	34	38	..	30	34	..	40	44	..	36	40	..
.	13	15	..	34	38	..	28	32	..	40	44	..	37	41	..
.	22	15	..	37	41	..	32	36	..	42	47	..	41	45	..
	13	15	..	35	39	..	29	33	..	41	45	..	39	43	..
3	19	21	23	39	..	47	35	39	42	43	48	52	41	45	49
3	19	21	23	39	..	47	35	39	42	43	48	52	41	45	49
3	19	21	23	40	..	48	36	40	43	43	48	52	42	47	50
4	22	24	26	41	..	49	39	43	47	44	49	53	43	48	52

Belgian Steel Output Gains; Coal Is Problem

LIEGE, BELGIUM

Trend of iron and steel production in Belgium is upward. Output in the closing months of 1946 was higher than at any time since the beginning of 1940. December output was 86 per cent of the 1939 monthly average.

Belgian production depends on the supply of coal and coke. At present, very little coal is coming from the Ruhr and this country must depend on imports from the United States. Domestic mine production is increasing but still is below prewar levels, now running about 70 per cent of 1939 output.

Belgium has now recovered all her ordinary customers. Many commercial agreements were signed in 1946 with various countries. On the basis of these commercial agreements, in the first three months of 1947, Belgium is allowed to export 30,000 metric tons to France, 15,000 to Great Britain, 15,000 to Sweden and 65,000 to the Netherlands. On the international markets, the delays of delivery of the Belgium steel producers are usually shorter than those of other countries.

Generally speaking, the Belgo-Luxemburg Economic Union is on the way to be soon again the most important steel exporter in Europe. Actually, preliminary returns show that, in 1946, the Union exported 1,522,525 metric tons of iron and steel, which compares with 2,281,205 metric tons exported from Great Britain, but in the latter part of the year Belgo-Luxemburg exports exceeded British exports.

Prices of steel products have not yet been fixed by the government. This delay is evidently disturbing for national transactions. Producers are not always willing to sell, knowing there will be an increase; buyers do not order, hoping this increase will not be as important as the producers say. The prices for export are not subject to regulation except when they are stated in a commercial agreement. With the countries with which there is no commercial agreement, the market is free.

NO JIGS NEEDED

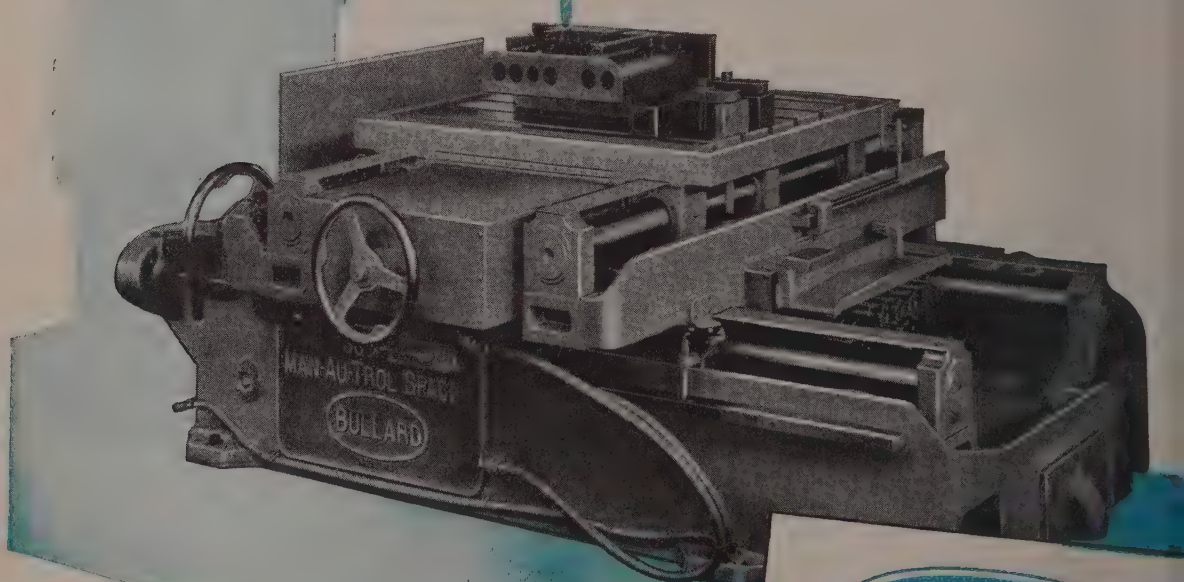
for drilling, boring, reaming and tappi

NEW Bullard MAN-AU-TROL Spacer Increases Speed and Reduces Cost of Drilling Operations

Now . . . with Bullard MAN-AU-TROL Spacers installed on your drills . . . you can start drilling, boring, reaming or tapping just as soon as your engineering drawings are ready.

Working from a master chart, the operator quickly, easily and accurately sets lateral and longitudinal position stops to match the specified pattern of holes. Then, the manually activated Spacer automatically repeats that pattern so that the holes are held *to the highest standard of commercial spacing accuracy.* Easy change-over from job to job and adaptability to an endless variety of work sizes and shapes makes the Spacer ideal for diversified shop schedules.

Consider the time, money and labor you will save when Bullard MAN-AU-TROL Spacers eliminate the need for designing, making, handling, repairing and storing hole-locating jigs. Write for MAN-AU-TROL Spacer Bulletin. The Bullard Company, Bridgeport 2, Connecticut.



Made in two sizes—30″ x 20″ (typical installation illustrated here) for larger work on 4′, 5′ and 6′ Radial Drills, and 4″ x 4″ for smaller work usually done on sensitive drills.

BULLARD

CREATES *NEW METHODS* TO MAKE MACHINES DO MORE

A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

A. J. Browning, Ford director of purchases, lists specifications for "purchasing agents of tomorrow." Declares buyers not given sufficient importance by industrial management. Asks for vision and imagination in bringing prices into reasonable levels

DETROIT

AUTOMOTIVE purchasing agents, ce the early days of the industry, ve been regarded generally by sup- ers as pretty tough customers—gentle- n who knew all the angles and did t hesitate to use them. At least this s the situation up until about 1941 ien most buyers here had to do an out face and start beating the bushes new suppliers, while attempting to rry special favors from their estab- ned sources. Hundreds of new per- nnel were brought into purchasing de- rtments as follow-up men, expediters d the like.

Result is that the old time automobile mpany P. A. has passed into history. s passing perhaps was formally sig- lized in a New York speech last week Albert J. Browning, vice president d director of purchases of Ford Motor ., which in past years had its share of ny-hearted buyers. Mr. Browning took his text, "Tomorrow's Purchasing gent," and noted his remarks were based gely on what appeared to him as good idence that the position and function of e purchasing agent in the American onomic scheme is not today given fficient importance by industrial man- ement.

Insufficient Responsibility Cited

A recent insurance company survey, r example, showed that in only six of companies supplying data did the rchasing agent have a title of vice esident, only 14 reported directly to e president, and in only seven out of did the purchasing agent determine e quantities of materials to be bought. 24 of 30 companies the purchasing ent was said to decide the price to paid—with some qualifications—and 24 out of 31 he selected the vendor. r. Browning added that while manage- ent may not value the purchasing agent fficiently, it may also be true that the rchasing agent is not doing at all hat he could in order to deserve top at- ntion and position.

A conservative estimate of the amount materials and supplies procured by anufacturing industries today is in the ighborhood of $50 billion annually, id Browning, adding that the Purchas- g Division at Ford alone will buy this ar about $700 million. Recognizing this major responsibility, he drew up a number of basic specifications for the purchasing agent of tomorrow. First, he should be salesminded, next he should have vision—to use the management brains, merchandising knowledge and research and engineering staffs of suppliers to the fullest extent; third, he should be an organizer with a capacity for leadership; fourth, he must create new techniques of buying—decentralizing, expanding sources, etc.; and finally he should have a broad business understanding to permit him to be a good judge of the forces which make particular sources of supply "good bets" over a period of years.

Mr. Browning, of course, was talking to a group of purchasing agents, most of whom doubtless echoed his sentiments 100 per cent, particularly his conclusion: "All of us who are purchasing agents of American enterprises can look upon ourselves as buying for the American people. If prices and costs are to come down, which is behind all that we are doing today at Ford, we can play an important part in the process. In the next decade or more we may be able to make a greater contribution to the well-being of the American people and the American nation through constructive buying. If we do it, it will be by imagination—by having vision—by being salesmen of low costs and prices—by being leaders and organizers—by giving a hand to the new and rising small business men of the nation—by intelligent constructive action."

Automobile Production

Passenger Cars and Trucks—U. S. and Canada

Estimates by Ward's Automotive Reports

	1947	1946
January	373,872	126,082
February	391,430*	84,109
March		140,738
April		248,108
May		247,620
June		216,637
July		331,000
August		359,111
September		342,969
October		410,510
November		380,664
December		380,908
12 ms.		3,268,456

* *Preliminary.*

Estimates for week ended:

	1947	1946
Feb. 8	89,958	23,785
Feb. 15	97,276	21,555
Feb. 22	102,098	19,410
Mar. 1	100,000	17,575

Plan Addition at Rouge

Plans are under way for construction of a one-story addition to the cold-rolled steel mill at the Rouge Plant, the new structure being 180 x 440 ft in size, located at the south end of the present mill. It will provide adequate working floor space and will eliminate excessive handling and transportation involved in present yard storage of hot-rolled coils. Annealing furnaces will be moved from their present location on the west side of the rolling mill to the east side.

Rearrangement of present facilities in the hot mill, removal of a balcony in the annealing bay and extensions to the cold mill building will make available floor space for handling 82,000 tons of hot-rolled, cold-rolled and annealed stock, although no increase in production capacity is involved. A proper balance between capacity for cold rolling and steel requirements both at the Rouge Plant and outside sources which are furnished steel is expected.

Expose Allocation Flaws

Further details on the effects of discriminatory allocation of merchant pig iron under CPA Conservation Order M-21 are supplied by Warner Gear Co. which purchases and machines about 1000 tons of gray and malleable iron castings weekly. The offending governmental order said to channel delivery of 50 per cent of total merchant pig production to the southern stove and cast iron pipe industry, although the industry and geographical area represent only 8 per cent of the normal tonnage used.

Before the war, purchasing officials of Warner Gear affirm, the cast iron pipe and stove industries of the south, as a whole, used little or no pig iron, inasmuch as low-cost scrap was available to charge cupolas. Today, however, it is alleged that with the help of the arbitrary allocation by CPA and the Federal Housing Authority, these foundries are using

10,000 TIRES DAILY: Truck tire building machines extend for a quarter of a mile in this section of Plant #1 of Goodyear Tire & Rubber Co., Akron, O. Here more than 10,000 truck tires can be produced daily

nearly 100 per cent pig iron and little or no scrap—an understandable action since they can buy their iron at from $30 to $35 per ton, while scrap or inferior grades of iron are being held by brokers and dealers at a price of from $40 to $60 per ton.

Warner Gear declares it is further stated by pig iron producers that iron far in excess of requirements of foundry capacities is being allocated and delivered to the south, and that some such pig iron is finding its way into hands of scrap dealers and brokers who are selling it at fancy prices throughout the north and as far away as California.

One of Warner's castings sources reports its sole pig iron supplier, the largest producer in the country, is being forced to deliver 87 per cent of its merchant iron production to southern users, leaving current stocks at this foundry of less than four days' supply. Termination of pig iron shipments in February and March has forced the foundry to suspend operations.

Information is to the effect the CPA industry advisory board, comprising principally representatives of merchant iron producers, recommended strongly two weeks ago that the system of allocating pig iron be dispensed with at the expiration of the Emergency War Powers Act. However, there is a rider on the Housing Authority Act which does not expire until June 30, permitting this authority to divert pig iron to southern cast iron pipe and stove industries, unless Congress intervenes. Incidentally, it should be added that the Housing Authority also is paying subsidies to high-cost pig iron producers furnishing some of this tonnage. Terminating the Emergency War Powers bill without exceptions on March 31 and immediately curtailing allocating powers of the Housing Authority are remedies suggested.

Ford Output Sets Record

New records were set by the Ford plant in January when total car and truck production exceeded 90,000 units, highest since June, 1941. February assemblies should come close to this figure, despite two fewer working days. Open-hearth steel production for January was 68,729 tons, highest since October, 1943, and continued at that level during February. Tractor production for January was 8750 units, and this division produced 59,773 during 1946, making it the best tractor year in Ford history, despite the fact the plant worked only 185 days, losing 68 days from parts shortages.

Incidentally, current buyers of new Ford passenger cars are receiving 1947 titles even though no physical changes were made in 1947 designs. This is calculated to protect them on used car valuations in the future when such models are traded for new ones.

Autos Take 25% of Sheets

Charges by Col. J. Monroe Johnson, director of the Office of Defense Transportation in Washington, that the motor industry was receiving a larger share of steel tonnage than past consumption warranted, and that 1946 receipts were three times those of 1945, drew sharp rejoinders from industry officials in Detroit. The comparison of 1946 1945 was grossly unfair, since the indu received little steel after midyear, cept for truck production. Actually automotive industry received only per cent of total flat-rolled steel ou in the first seven months of last against a prewar pattern of 35-40 cent (the figure was 37.5 per cen 1940), while the latest figures avail for October, show this figure had creased to only 31 per cent. It is do ful this percentage has gained r more than 2 or 3 points even thr February, since steel companies been trying manfully to maintain a apportionment of available ton among clamoring users. What the motive industry would like to avo any erroneous public impression tha current freight car shortage is its sponsibility because it has been gobb up too much steel. This is certainly from the case, particularly when sideration is given the fact nearly third of 1946 automotive production in the form of trucks and comme vehicles which in a measure hel relieve a rail crisis.

Truck Registration at Peak

Preliminary study of truck registra for 1946 convinces R. L. Polk & more trucks are registered today at any time in the nation's history total of 5,067,065 was registered year, 11.32 per cent higher than total for 1941, and 14.64 per cent hi than for 1944.

K-F Short of Engines

Kaiser-Frazer continues to encou difficulties in obtaining enough en from Continental Motors to permit ping up car assemblies beyond 400 a and has been forced to reduce its sonnel to conform to engine shipm Labor disputes have slowed receip power plants from Continental's Mu gon, Mich., plant but a Detroit has been retooled and is now appro ing 200 units a day, hoping to inc this to 700 by May. Total shipm of cars since the start of operation Willow Run are now well past 20

A. J. Bedworth has been promote assistant general planning superinten by K-F, and will have charge of engi ing specifications, follow-up and sch ing.

Goodyear Earnings High

Record peacetime sales of tires other rubber products in 1946 res in the largest net earnings in hi for Goodyear, equivalent to $16.07 common share or nearly three times 1945 rate.

PRINGFIELD MACHINE TOOL COMPANY

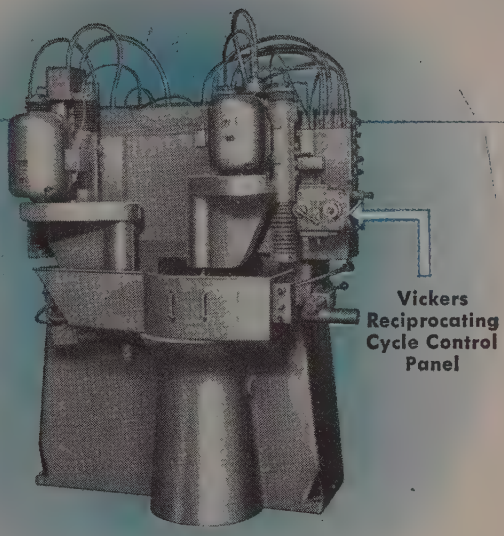
Uses

VICKERS

HYDRAULIC CONTROLS

to achieve

- INCREASED PRODUCTION
- BETTER WORK FINISH
- SIMPLICITY OF INSTALLATION
- VERSATILITY OF OPERATION
- PROTECTION OF MACHINE, WORK AND OPERATOR



Springfield Special Purpose Grinder

The manufacturer has utilized Vickers Hydraulic Controls on his special purpose grinder to provide an important increase in production, better work finish, simpler operation, and protection for the operator, machine and work.

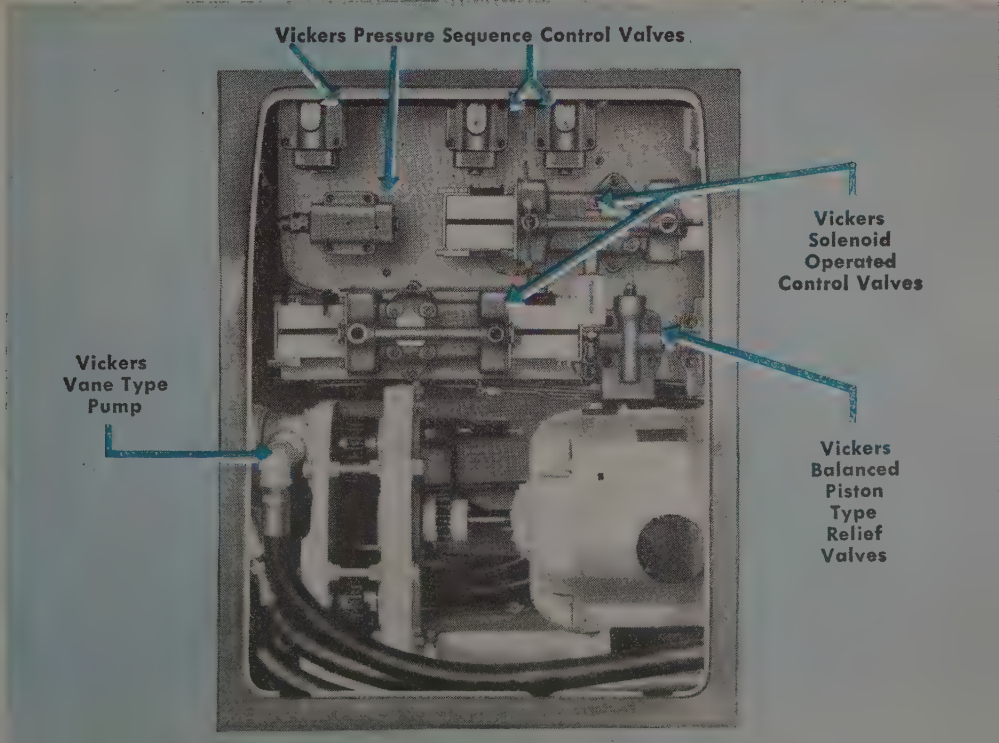
The machine grinds the backface and bore of the ring gear in one setup. Each grinding wheel is reciprocated hydraulically in proper sequence. All phases of machine cycle operation are interlocked hydraulically to prevent damage to work and machine.

Vickers Reciprocating Cycle Control Panel provides smooth reciprocation of grinding wheel, thus providing better finish. Stroke lengths are adjustable and maintained accurately thus eliminating unnecessary and time-consuming overtravel for a specific setup. Adjustable speed hydraulic drive of work spindle makes possible the best combination of speeds for better finish.

Other Vickers Gasket Mounted Valves (in panel type assembly shown below) permit low cost installation and greater accessibility for adjustment and maintenance. They centralize hydraulic equipment for space saving and improved appearance . . . piping is simplified.

A Vickers Application Engineer will be glad to discuss with you how hydraulic controls can be used to advantage on your products. Get in touch with nearest office listed below.

one of a series of applications out the many advantages Vickers Hydraulic Controls.



Rear View of Springfield Grinding Machine with Cover Plate Removed

VICKERS
Corporated
80 OAKMAN BLVD.
OIT 32, MICHIGAN

lication Engineering Offices:
ATLANTA • CHICAGO
ICINNATI • CLEVELAND
ETROIT • LOS ANGELES
WARK • PHILADELPHIA
OCHESTER • ROCKFORD
LE • TULSA • WORCESTER

INEERS AND BUILDERS OF OIL HYDRAULIC UIPMENT SINCE 1921

Chicago Plants Of Sheet & Tube To Be Expanded

Plans to increase ingot capacity in Chicago area to equal that in Youngstown revealed by President Frank Purnell

PLANS to increase materially Youngstown Sheet & Tube Co.'s ingot capacity at Chicago "just as soon as prices and deliveries are right and we can afford to do it," were revealed by Frank Purnell, president, in a talk before the Economic & Business Foundation in Youngstown recently.

Mr. Purnell, although not specific as to what facilities would be required for the expansion, said that his company is planning enough new steel capacity in Chicago to match the area's finishing capacity; this eventually would give it as much steel-producing capacity as the company now has in Youngstown. Currently 64 per cent of its more than four million net tons annual capacity is located in Youngstown; 36 per cent is in the Chicago area.

The Youngstown company, which over the last 17 years has spent $132 million on improvements, has under way presently two large projects: A cold-drawn bar mill with yearly capacity of about 100,000 tons is being installed in its Brier Hill plant; and an electric weld mechanical tubing mill is being added to its Struthers plant.

This 17-year period has been a particularly significant one for Mr. Purnell because he has been president during that time. He will celebrate his 45th year with the company this month.

Company's Growth Outlined

William H. Texter, assistant sales promotion manager of the company, shared the speakers' platform with Mr. Purnell and outlined the growth of the organization since its inception in 1900. From 1900 through 1946, Mr. Texter said, the company shipped 52,282,178 net tons of steel products and paid its employees more than $1 billion in wages and salaries. Taxes during this period amounted to approximately $200 million.

Mr. Purnell, whose optimism in the future of the country and his company even in the depths of the depression led him to borrow heavily in order to expand and modernize company's facilities even against advices of financial interests, states the acute shortage of steel which has been plaguing steel consumers since the war's end will be over by the end of this year. The industry, in his opinion, would have caught up with demand in 1946 had it been free to produce without tonnage-wasting interruptions.

THANKS FROM CHINA: A scroll expressing appreciation to Lincoln Electric Co., Cleveland, for providing technical training to Chinese during the war is presented by China's ambassador to the United States, Dr. Wellington Koo, left, on behalf of China's president, Chiang Kai-Shek, to Lincoln Electric's district manager, G. N. Bull, at a dinner in New York recently

Materials Handling School Held by Pittsburgh Steel

School was in session recently for approximately 30 sales and materials handling engineers of Pittsburgh Steel Products Co., subsidiary of Pittsburgh Steel Co., Pittsburgh, when they attended a week-long course of study on modern methods of materials handling and palletizing. The school, which was held at the George Washington Hotel, Washington, Pa., was organized by the Materials Handling Laboratory, Boston.

In addition to covering the history of materials handling and making plant inspection trips, a complete range of technical subjects in the materials handling field was discussed.

Lamson & Sessions Honors Long-Service Employees

Twelve veteran employees whose length of service totals 673 years were honored Feb. 22 by the Lamson & Sessions Co., Cleveland. Heading the list of veterans was George Dennerle who has been with the company for 65 years. The other eleven employees have b with the bolt and nut manufactur concern for 50 years or more. Each v presented with a gold watch. Six ot employees, who recently retired a completing 50 years' service were gi $100 checks.

To honor the veterans, a dinner held with 1100 attending. Speakers the occasion included Frank J. Lausc former Ohio governor, and Roy Smith, president of Lamson & Sessi Presentation of the awards was made George S. Case, chairman of the bo who in turn was presented a lapel by Mr. Smith in recognition of his years of service with the company.

Portable Products Opens New General Sales Office

Portable Products Corp., Pittsbur formally opened general sales offices the Woolworth Bldg., New York, cently. The company is composed of following divisions and subsidiar Coldwell-Philadelphia Lawn Mower D sion, Newburgh, N.Y.; Paul & Beekm Division, Philadelphia; C. J. Taglia Division, Brooklyn, N. Y.; Portable Pr ucts Division, Pittsburgh; Portable Sa Division, Pittsburgh; American Pad Textile Co., Greenfield, O.; General T vision & Radio Corp., Chicago; and G Western & LaMar Fuse Cos., Pittsbur

RIEFS . . .

Paragraph mentions of developments of interest and significance within the metalworking industry

ydro-Line Mfg. Co., Rockford, Ill., ntly formed, is planning to manufac- a complete standard line of air and aulic cylinders. In addition it will gn and build special machinery and pment.

—o—

B. S. Steel & Forge, Los Angeles, erly a partnership, has been in- orated with Gordon W. Shultz as ident.

—o—

endix Home Appliances Inc., South l., Ind., has developed a suspended r for installation on its automatic ers in areas which have low-pres- water systems. The device lengthens timing of the washer to allow for plete changes of water.

—o—

win Coach Co., Kent, O., has an- ced its motor coach deliveries hed an alltime high in January with urban coaches shipped.

—o—

ailway Controls Division, Minneap- Honeywell Regulator Co., Minneap- has developed an electronic con- system for railroad car heating and conditioning which Pullman-Stand- Car Mfg. Co., Chicago, will install 84 cars being built for the Chesa- e & Ohio, Pere Marquette and el Plate lines.

—o—

. K. Tool Co. Inc., Shelton, Conn., appointed A. C. Pletz, Cincinnati, as epresentative for southern Ohio.

—o—

luminum & Magnesium Division Re- ch Committee, American Foundry- 's Association, Chicago, will sponsor ndamental study of hydraulics of l flow in a mold. Although primarily emed with light alloy castings, much he information to be obtained from study will be applicable to the cast- of all metals.

—o—

ulien Steel Products Inc., Seattle, ed into its new headquarters build- n East Marginal Way on Mar. 1.

—o—

ow Chemical Co., Midland, Mich., produced two 16mm sound films, asure from the Sea" and "This Is nesium," which have been made able to educational audiences by eton Film Center, Princeton, N. J.

—o—

inton Products Co., division of Free- Sulphur Co., Baltimore, has been ized to carry on the research work e parent company. Charles D. G. Breckenridge is manager of the new division.

—o—

Robinson Heaters Inc., Columbus, O., newly organized, plans to manufacture gas space heaters in a plant to be erected in that city.

—o—

Askania Regulator Co. has moved into new quarters, and its general offices, factory and laboratories are now located at 240 E. Ontario St., Chicago 11.

—o—

Babcock & Wilcox Co., New York, has appointed Portilla Corp., San Juan, P. R., as its agent for Puerto Rico and adjacent islands. The Portilla company will also represent the company's Refractories Division and Babcock & Wilcox Tube Co.

—o—

Reed-Prentice Corp., Worcester, Mass., has announced that its president, F. W. McIntyre, is visiting its dealers in South America for the purpose of analyzing the markets for machine tools, plastic injection molding and die casting machines in the Latin American countries.

—o—

Westinghouse Electric Corp., Pittsburgh, has entered into a long-term contract with Mifflinburg Body Works, Mifflinburg, Pa., to purchase the latter company's entire output of radio cabinets.

—o—

Glenn L. Martin Co., Baltimore, has purchased the assets and patents of Rotawings Inc., Philadelphia, and will operate it as a division with headquarters in North Wales, Pa. The Martin company plans establishment of a division for research and experiment with helicopter control systems, rotor hubs and blades in connection with the acquisition.

—o—

Union Steel Casting Division, Blaw-Knox Co., Pittsburgh, has acquired from WAA for $488,340 the government-installed facilities at the Pittsburgh plant which it has operated under lease.

—o—

Hotpoint Inc., Chicago, has completed a 10-day training conference for regional product service specialists in Chicago. Further conferences are planned for Erie. Pa., Bridgeport, Conn., and Trenton, N. J.

—o—

Sheffield Corp. of Australia Pty. Ltd., recently formed by Sheffield Corp., Dayton, O., to manufacture gages, measuring instruments and machine tools, is headed by the following: Louis Polk, chairman of the board; A. R. Booth, managing director; John P. Bernard and Ernest Hazell, directors; and R. L. Booth, secretary; Messrs. Polk and Bernard are Americans, Mr. Bernard being executive vice president of the parent company. In STEEL, Feb. 10, p. 83, Mr. Polk was erroneously referred to as an Australian.

—o—

Standard Tube Co., Detroit, has appointed Metal Goods Corp., St. Louis, as its distributor for Arkansas, Colorado, Kansas, Louisiana, Missouri, Nebraska, Oklahoma, Tennessee and Texas.

—o—

Ellicott Machine Corp., Baltimore, manufacturer of dredging machinery, sand pumps, marine engines and related products, has acquired the space and equipment of W. H. Niemeyer & Co., that city, which has served as Ellicott's pattern shop.

—o—

Wilbert-Miller Co., Cleveland, producer of machinery for laundry and dry cleaning firms, has plans to establish a warehouse and office at 170 N. Third St., Columbus, O.

—o—

Monsanto Chemical Co., St. Louis, has begun construction of additional elemental phosphorus production facilities at Columbia, Tenn. The expansion, which will cost more than $2 million, will increase the company's phosphorus output by 50 per cent.

—o—

American Welding & Mfg. Co., Warren, O., has transferred its Cleveland district sales office from Warren to the Union Commerce Bldg., Cleveland.

—o—

Pittsburgh Range Co., McKees Rocks, Pa., has been reorganized and plans to manufacture electronic products and other items in addition to its plastic and metal furniture lines.

—o—

Bradley Paint Engineers Inc., Pittsburgh, has been formed to manufacture industrial maintenance paint and industrial product coatings and will conduct a "paint engineering" service to industry. Its plant is at Connellsville, Pa.

—o—

Joshua Hendy Iron Works, formerly of Sunnyvale, Calif., has moved its headquarters to Los Angeles, following the lease of the Sunnyvale plant by Westinghouse Electric Corp., Pittsburgh.

—o—

Mercantile Metal & Ore Corp., New York, has published a booklet tabulating the chemical analyses of standard steels. Included are basic open-hearth and acid bessemer carbon steels, basic open-hearth and acid bessemer sulphurized carbon steels, and open-hearth and electric furnace alloy steels.

Industrial Production Hits New Postwar High

NEW postwar records in steel and automobile output pushed STEEL's industrial production index for the week ended Feb. 22 to a new high of 159 per cent (preliminary) of the 1936-1939 average of 100. This is one point above the previous postwar high and two points above the index for the week ended Feb. 15.

The index would be higher if railroad car loadings were as high as they were last fall. However, current car loadings are considerably higher than they were in the corresponding weeks of last year.

Electricity production has consistently been a strong factor this year in the index. With industry operating thus far this year at a much higher level than during the corresponding period of 1946 the resultant demand for electric power has been considerably stronger than it was a year ago.

In helping push the industrial index up, steel ingot production in the week ended Feb. 22 reached 94.5 per cent of capacity, brightening hopes that supply and demand will be in better balance before many months.

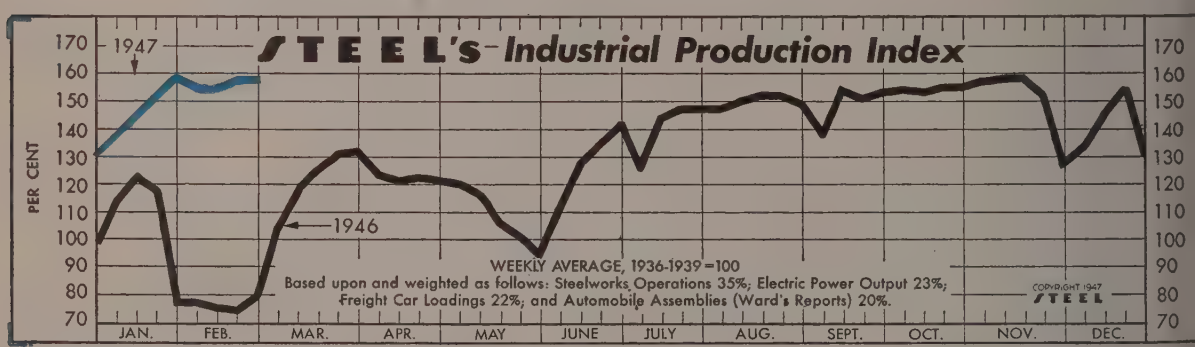
The auto industry helped raise the industrial activity level by producing an estimated 102,098 passenger cars, trucks, and buses in the week ended Feb. 22. That is the greatest output since July, 1941.

COAL—Also on a high plane is bituminous coal output, the production for the week ended Feb. 15 being e mated at 12,345,000 tons, compared with 12,300,000 the preceding week. Production this year through F 15 was 3.2 per cent ahead of that for the correspond period of 1946.

CONSTRUCTION—Indicative of the great demand new construction, the dollar volume of construction c tracts awarded in the 37 eastern states during Janu was the highest for that month in the F. W. Dodge Cor statistical series dating back to 1925, despite high pri materials shortages and government restrictions. C tracts totaled $571,628,000, compared with $357,501,(in January, 1946, and $457,278,000 in December. T January increase was due in part to sharp gains in he engineering construction.

EMPLOYMENT—Meanwhile, winter weather was h ing down employment in the construction industry, U. S. Bureau of Labor Statistics reporting 145,000 fe workers employed in that field in January than in D cember. However, the decrease in January was so what smaller than in either November or December. tal construction employment was estimated at 1,728,(in January, about 25 per cent below the 1946 peak August but more than 40 per cent above the level o year ago.

RAILROADS—Advance report from 87 class 1 railroa whose revenues represent 81.6 per cent of total operat revenues, indicate railroad operating revenues in Janu increased 6.5 per cent above the corresponding month 1946, the Association of American Railroads reported.



The Index (see chart above): Latest Week (preliminary) 159 Previous Week 157 Month Ago 157 Year Ago

FIGURES THIS WEEK

INDUSTRY	Latest Period*	Prior Week	Month Ago	Y A
Steel Ingot Output (per cent of capacity)‡	94.5	93.5	91.5	
Electric Power Distributed (million kilowatt hours)	4,778	4,778	4,856	3,9
Bituminous Coal Production (daily av.—1000 tons)	2,057	2,050	2,204	2,(
Petroleum Production (daily av.—1000 bbls.)	4,786	4,758	4,672	4,7
Construction Volume (ENR—Unit $1,000,000)	$98.5	$54.8	$73.9	$5
Automobile and Truck Output (Ward's—number units)	102,098	97,276	93,278	19,4

* Dates on request. ‡ 1947 weekly capacity is 1,749,928 net tons. 1946 weekly capacity was 1,762,381 net tons.

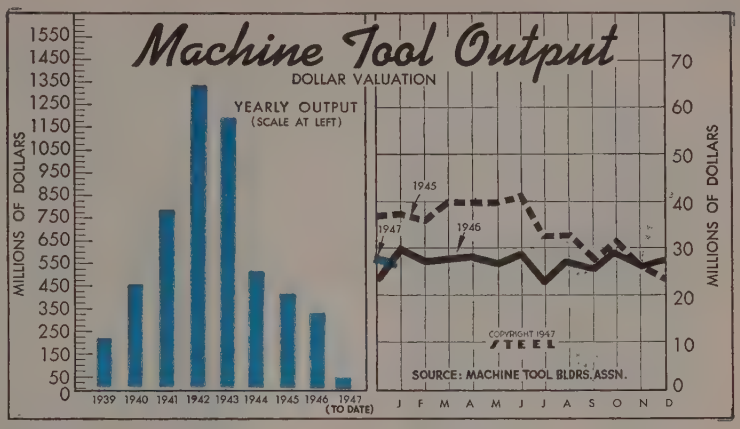
TRADE				
Freight Carloadings (unit—1000 cars)	785†	800	822	7
Business Failures (Dun & Bradstreet, number)	58	62	52	
Money in Circulation (in millions of dollars)‡	$28,276	$28,346	$28,369	$27,9
Department Store Sales (change from like week a year ago)‡	+18%	+2%	+17%	+

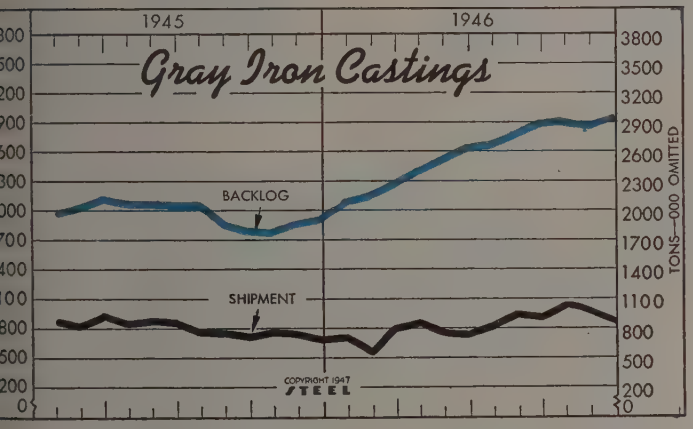
† Preliminary. ‡ Federal Reserve Board.

Machine Tool Shipments

(000 omitted)

1947	1946	1945	1944
$26,542	$30,263	$37,353	$56,363
.....	26,949	36,018	50,138
.....	27,326	40,045	51,907
.....	28,108	40,170	41,370
.....	26,580	39,825	41,819
.....	28,580	41,040	41,471
.....	22,360	32,504	32,753
.....	26,911	32,500	35,177
.....	25,468	27,300	35,889
.....	29,140	31,200	37,516
.....	26,176	26,084	36,277
.....	27,587	23,276	36,784
.....	$325,448	$407,315	$497,464





Gray Iron Castings

(U. S. Bureau of Census)

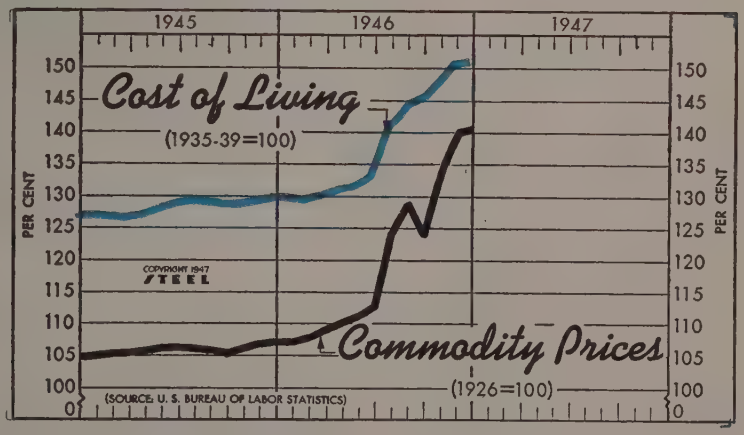
Tons—000 omitted

	Shipments 1946	Shipments 1945	Backlogs* 1946	Backlogs* 1945
Jan.	706	862	2,077	1,922
Feb.	541	816	2,153	1,998
Mar.	796	928	2,265	2,089
Apr.	857	843	2,378	2,032
May	757	867	2,492	2,031
June	735	849	2,633	2,016
July	811	749	2,669	2,015
Aug.	945	750	2,786	1,818
Sept.	914	718	2,882	1,755
Oct.	1,051	767	2,916	1,742
Nov.	964	751	2,888	1,847
Dec.	889	678	2,952	1,877
Mo. Ave..	830	798	2,591	1,928

*Unfilled orders for sale to the trade.

Wholesale Commodity Price—Cost of Living Indexes

—Commodities— (1926=100)			—Living Cost— (1935-39=100)		
1946	1945	1944	1946	1945	1944
107.1	104.9	103.3	129.9	127.1	124.2
107.7	105.2	103.6	129.6	126.9	123.8
108.9	105.3	103.8	130.2	126.8	123.8
110.2	105.7	103.9	131.1	127.1	124.6
111.0	106.0	104.0	131.7	128.1	125.1
112.9	106.1	104.3	133.3	129.0	125.4
124.7	105.9	104.1	141.2	129.4	126.1
129.1	105.7	103.9	144.1	129.3	126.4
124.0	105.2	104.0	145.9	128.9	126.5
134.1	105.9	104.1	148.6	128.9	126.5
139.7	106.8	104.4	152.2	129.3	126.6
140.9	107.1	104.7	153.3	129.9	127.0
120.9	105.8	104.0	139.3	128.4	125.5



NANCE

	Latest Period*	Prior Week	Month Ago	Year Ago
Bank Clearings (Dun & Bradstreet—millions)	$13,879	$9,826	$13,093	$13,266
Federal Gross Debt (billions)	$259.4	$259.4	$259.7	$279.5
Bond Volume, NYSE (millions)	$15.2	$16.4	$22.2	$31.7
Stocks Sales, NYSE (thousands)	4,579	5,317	4,426	7,598
Loans and Investments (billions)†	$55.3	$55.6	$56.1	$67.9
United States Gov't. Obligations Held (millions)†	$35,150	$35,592	$36,231	$49,485

† Member banks, Federal Reserve System.

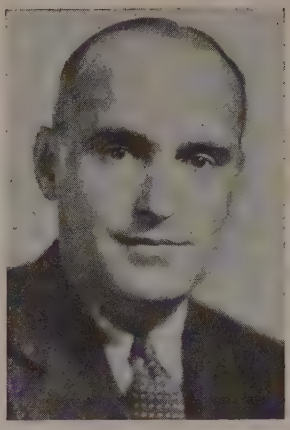
ICES

STEEL's composite finished steel price average	$69.73	$69.73	$69.36	$58.27
All Commodities†	143.1	141.7	140.8	107.2
Industrial Raw Materials†	154.3	153.1	153.3	119.7
Manufactured Products†	139.1	137.5	136.4	103.2

† Bureau of Labor Statistics Index, 1926=100.

Men of Industry

FREDERICK U. CONARD



B. M. HORTER

HOWARD W. KANE

Frederick U. Conard, formerly vice president of Underwood Corp., New York, has been appointed president and general manager of Niles-Bement-Pond Co., West Hartford, Conn. He succeeds **Charles W. Deeds** who has resigned to devote full time to his widely-diversified personal interests.

—o—

J. Bruce Drever, management consultant, Chicago, has been elected president and general manager, Appleton Mfg. Co., Batavia, Ill. **John Van Nortwick Jr.** has been appointed vice president in charge of sales.

—o—

Alex Miller, Columbia Iron & Metal Co., Cleveland, has been made chairman of the National Affairs Committee, Institute of Scrap Iron & Steel Inc., Washington, for 1947.

—o—

Joseph E. Workman, formerly assistant sales manager, Latrobe Electric Steel Co., Latrobe, Pa., has been elected vice president and manager of sales. He succeeds **Arthur M. Morgan,** retired. Mr. Morgan remains as a director of the company.

—o—

John M. Curley has been elected president, Eastern Stainless Steel Co., Baltimore, succeeding the late **Thomas F. McLaughlin. Lachlan MacKenzie** has been elected vice president; he was formerly assistant treasurer and comptroller. Mr. Curley is also chairman of the board of the company, and president of a subsidiary, Industrial Steel Inc., of Cambridge, Mass.

—o—

William E. Bridgman has been appointed sales representative for the Boston district of the Cyclone Fence Division, American Steel & Wire Co., a subsidiary of United States Steel Corp. With Mr. Bridgman's appointment the company announces the creation of a new sales district which embraces the states of Maine, New Hampshire, Vermont, Rhode Island, and eastern Massachusetts.

—o—

B. M. Horter, Cutler-Hammer Inc., Milwaukee, has been appointed director of purchases, and will be in charge of purchasing for all the company's plants. He was formerly purchasing agent for the Milwaukee factory. Other changes in the company's organization are: **J. C. Borden,** appointed comptroller, and **Rex Davies,** appointed manager, Credit and Collection Department. **H. F. Vogt** has resigned as vice president and treasurer, but will continue as chairman of the executive committee.

—o—

Dennis L. McElroy and **Joseph Pursglove Jr.** have been elected vice presidents of the Pittsburgh Consolidation Coal Co., Pittsburgh.

—o—

Harlowe Hardinge, president of the Hardinge Co. Inc., York, Pa., was elected president of the Manufacturers' Association of York.

—o—

George Gibbs, A. M. Castle & Co., Chicago, has resigned as vice president of the Milwaukee branch, but will continue in an advisory capacity with the company. He is succeeded by **Jerome W. Ingwersen.** The Milwaukee division was formerly the Gibbs Steel Co.

—o—

W. C. Fahie has resigned as head of the instrument section of the Physics Department of the British Iron & Steel Research Association, London, Eng., to take an appointment in the Ministry of Defense. He is succeeded by **S Carlisle** who joined the associatio 1946 following service in the Ex mental Department of H.M.S. "E lent," Portsmouth, on the staff of director of scientific research, Adm ty.

—o—

Howard W. Kane has been ele president of Kane & Roach Inc., S cuse, N. Y., to succeed his father, late **William E. Kane.**

—o—

H. J. Rowe, chief metallurgist, ings Division, Aluminum Co. of A ica, Pittsburgh, has been elected c man of the 1947 alloy recommend committee of the Aluminum & Ma sium Division of the American Foun men's Association.

—o—

Frank L. Cassidy, Seidelhuber Ir Bronze Works Inc., Seattle, has bee pointed vice president in charge of

—o—

L. M. Morley has been elected a president of the Minneapolis-H well Regulator Co., Minneapolis. Morley, vice president in charge of for the Brown Instrument Co., a sidiary company, will continue to s vise sales of the industrial control de made by the Brown division.

—o—

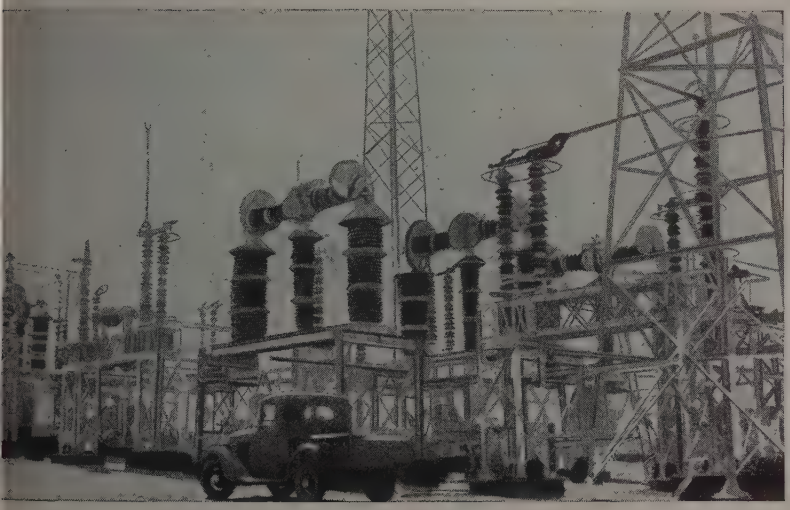
C. E. Jones has been appointed president of Agaloy Tubing Co., Sp field, O. Connected with the industry since 1932, he has been ciated with Agaloy Tubing Co. sinc release from the Navy.

—o—

Boyd R. Hopkins has been appo manager in charge of Thermex Girdler Corp., Louisville. He suc **C. C. Brumleve,** who has resigned

HARPER fastening NEWS

NDUSTRY EYES MAINTENANCE COST



Electric Utilities Demand Endurance at Low Cost

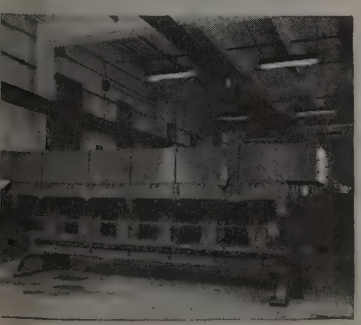
Thousands of miles of power lines which feed countless homes and industries throughout the country must be built as inexpensively as possible yet with rugged endurance to stand weather conditions and severe strains.

This low cost is achieved in the connectors, switches, tower hardware, underground junction boxes and many other details through the use of non-ferrous fastenings. Bolts, nuts, washers and screws that will not rust or corrode and can be used again and again to achieve low maintenance cost.

These fastenings of silicon bronze, and other alloys have great strength and can be depended upon to hold securely.

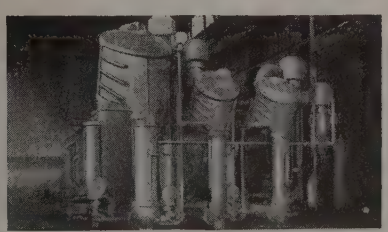
ULP and PAPER MACHINERY MUST BE TOUGH

A packer screen which separates knots d extraneous matter from the pulp solun before drying and forming, in the manacture of paper, is jogged 600 times per nute against heavy loads. Vital bolts and rews which must stand this strain yet be nstantly free for removal in servicing are Harper non-ferrous and stainless alloys.



FOOD PRODUCTS CORRODE COMMON METALS

Food industries are particularly trying on metals. Most foods themselves have highly developed cor-



rosive properties, yet it is essential that all containers be free from corrosion as is this evaporator equipped with Stainless Steel bolts, nuts, etc.

The H. M. HARPER COMPANY
2646 Fletcher Street
CHICAGO 18, ILLINOIS
Branch Offices—New York City, Philadelphia, Los Angeles, Milwaukee, Cincinnati, Dallas

HARPER Chicago

HARPER SPECIALIZES IN EVERLASTING FASTENINGS

will shortly become a manufacturers' representative in Louisville. Mr. Hopkins was formerly eastern district manager for Thermex.

—o—

Richard W. Parsons has been appointed technical director of the Mansfield factory, Ohio Brass Co., Mansfield, O.

—o—

R. W. Stueve, formerly general supervisor of labor relations for the American Car & Foundry Co., New York, has been appointed assistant comptroller.

—o—

James W. Irwin has joined the Ford Motor Co., Dearborn, Mich., as assistant to the president and director of public relations.

—o—

Paul W. Seiler, president, Motor Tool Mfg. Co., Detroit, and formerly president and general manager of Ternstedt Mfg. Co., Yellow Truck & Coach Mfg. Co., and General Motors Truck Corp., has been elected to the board of directors of the Standard Products Co., Detroit.

—o—

C. B. S. Steel & Forge, Los Angeles, recently incorporated, has announced the appointment of officers: **Gordon W. Schultz,** president; **Milo F. Burke,** vice president and **John H. Van Uden,** secretary.

—o—

A. J. Sherman has been appointed factory superintendent and **Jesse W. Elliott,** assistant superintendent, of the Monarch Machine Tool Co., Sidney, O. Mr. Sherman has been associated with Monarch Machine Tool Co. since 1916 and has served in various supervisory capacities for the company.

—o—

The American Institute of Electrical Engineers has announced the names of candidates nominated for offices becoming vacant August, 1947. **Blake D. Hull,** chief engineer, Southwestern Bell Telephone Co., St. Louis, has been nominated for president. Five nominated for vice presidents are **G. W. Bower,** Public Service Electric & Gas Co., Newark, N. J., for the middle-eastern district; **J. H. Berry,** Virginia Electric & Power Co., Norfolk, Va., for the southern district; **I. M. Elliestad,** Northwestern Bell Telephone Co., Omaha, Nebr., north-central district; **D. I. Cone,** Pacific Telephone & Telegraph Co., San Francisco, Pacific district; **D. G. Geiger,** Bell Telephone Co. of Canada Ltd., Toronto, Ont., Canada district. Nominated for directors are: **W. L. Everitt,** head of electrical engineering department, University of Illinois; **A. C. Monteith,** Westinghouse Electric Corp., Pittsburgh; and **E. B. Robertson,** president, Plastics Mfg. Co., Dallas, Tex. **W. I. Slichter,** professor emeritus, Columbia University, New York, has been nominated for treasurer.

—o—

Robert P. Allison Jr., General Electric Co., Schenectady, N. Y., has been appointed manager of the company's new Marginal Street Works in Lowell, Mass. He will be assisted by **Howard J. Stewart,** recently with the company's plant at York, Pa.

—o—

The Electric Products Co., Cleveland, has announced establishment of a Cleveland district office, which will be under the management of **G. D. Doss.**

—o—

William P. Neal has been appointed assistant manager, Steel Division, Mercantile Metal & Ore Corp., New York. For the past four years he was engaged in the export department, New York, of Jones & Laughlin Steel Corp., Pittsburgh.

—o—

M. Schratz, auditor, Aluminum Co. of America, Pittsburgh, has been appointed to the new post of controller. **Norman R. Althauser** has been named assistant controller.

—o—

Otto A. Bendler has been appointed Detroit district manager, Peterson Steels Inc., New York, succeeding **N. H. Schermer.**

—o—

C. J. Moore, assistant manager, Pittsburgh branch, Electric Storage Battery Co., Philadelphia, has been promoted to manager of that branch. He succeeds **W. B. Bowie** who has been appointed manager of railway and engineering sales in Philadelphia.

—o—

F. W. Meyers Jr. has been elected vice president, Pittsburgh Range Co., McKees Rocks, Pa., recently reorganized. **G. F. Landgraf** has been elected vice president in charge of engineering. Mr. Meyers was formerly controller and a director of Rockwell Mfg. Co., Pi burgh, and vice president of all Ro well subsidiaries. Mr. Landgraf been associated with Bartlett-Hayw Division, Koppers Co. Both offic have become members of the board directors. **G. F. Gardner, R. C. Aik head** and **L. G. McClintock** have signed as officers but continue as di tors of the reorganized company. T will be associated with the newly form A. M. G. Products Co.

—o—

J. P. Murphy, formerly secretary treasurer, C. W. Olson Mfg. Co., M neapolis, has been elected president the company to succeed **N. J. Vire** who has been named chairman of board. Other officers elected are S. **Olson,** vice president and sales manag and **Carl W. Olson Jr.,** secretary, tre urer and foundry manager.

—o—

Philip S. Morris has been named sistant to the president, McQuay I Minneapolis. He was formerly execut vice president and general manager McQuay Aircraft Corp., and Plexw Mfg. Co., both of Los Angeles.

—o—

Lloyd S. Knight, formerly Detroit vision manager, James Flett Organizat Inc., Chicago, has been appointed m ager of the firm's New York Divis **Elmer T. McCleary** has been appoin manager of the Detroit Division.

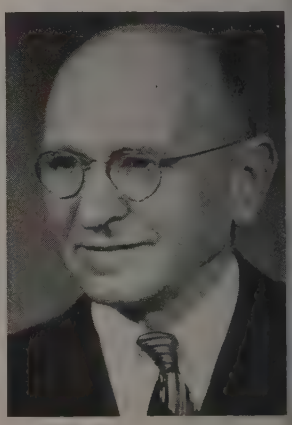
—o—

Charles E. Smith has been promo to the newly created position of exe tive vice president, Towmotor Co Cleveland. He has been vice presid of the corporation.

—o—

Anton Erhardt Sr., National Tool Cleveland, has been appointed chief gineer of the company. Formerly fac superintendent, he is succeeded in

A. J. SHERMAN



ANTON ERHARDT

LEWIS ROLLS

...HELP MAINTAIN
PEAK PRODUCTION
OF ROLLED METALS

WIS FOUNDRY & MACHINE
DIVISION OF BLAW-KNOX COMPANY
PITTSBURGH, PA.

ALSO MANUFACTURERS OF
ROLLING MILL MACHINERY
FOR THE IRON, STEEL AND
NON-FERROUS
INDUSTRIES

position by **James C. Grossman**, previously associated with the Cleveland Automatic Machine Co.

—o—

J. S. Cude has been appointed assistant director of personnel, Southern States Iron Roofing Co., Savannah, Ga.

—o—

John L. Abbott recently joined North American Philips Co. Inc., New York, as application engineer in the Industrial X-ray Division.

—o—

Fritz B. Ernst, vice president, American Steel Foundries, Chicago, has retired. He had been associated with the company 40 years.

—o—

Don Cummins has been appointed quality manager of Cummins Engine Co., Columbus, Ind.

—o—

Kennametal Inc., Latrobe, Pa., has announced the addition of seven men to its staff of application engineers. They are: **A. V. Andrews** and **John L. Sullivan** at the Pittsburgh office; **Gerald Bogner**, Cleveland; **Charles R. Demmitt Jr.**, Chicago; **Robert Karakoosh**, Springfield, Mass.; **Walter C. Lavers** and **Jos. F. Liebscher**, Los Angeles.

—o—

Robert B. Wetsel has been appointed manager of anode sales, B. F. Goodrich Co., Akron. He will handle sale of all industrial products made directly from rubber latex by the anode process.

—o—

Robert F. Vandenberg has been appointed to represent the Hendrick Mfg. Co., Carbondale, Pa., in New York state as district sales representative. He will make his headquarters at Carbondale and will represent Hendrick in the entire state with the exception of the territory adjacent to New York.

—o—

Joseph D. Ritz, chief chemist at the Pittsburgh Works, Jones & Laughlin Steel Corp., Pittsburgh, has retired after 53 years with the corporation.

—o—

Joseph Watterson has been appointed director of engineering, Associated Engineers Inc., Ft. Wayne, Ind.

—o—

The Hydro-Line Mfg. Co., Rockford, Ill., which has recently been formed, has announced the election of its officers: **G. A. Markuson** has been named president; **Gust J. Peterson**, vice president and **H. W. Johnson**, secretary. All three were formerly associated with the John S. Barnes Corp., Rockford, Ill. **Ray O. Harding** has been appointed treasurer.

—o—

Raymond L. Phebus has joined the research laboratory of **Dr. Carl A. Zapffe**, consulting metallurgist of Baltimore. He has had previous experience in the metallurgical departments of the Glenn L. Martin Co. and the Rustless Iron & Steel Division, American Rolling Mill Co.

—o—

William Kerber has been appointed vice president and general manager of the Hanna Furnace Corp., Detroit, an associate of Great Lakes Steel Corp. He succeeds the late **E. Kay Ford.**

—o—

Walter A. Weiss has been appointed supervisor of quality control, Radio Tube Division of Sylvania Electric Products Inc., New York.

—o—

Frank A. Streiff, American Brake Shoe Co., New York, has been appointed assistant vice president in the sales department of the Southern Wheel Division of the company. He will be located in Portsmouth, Va.

—o—

Aaron Brenner, F. Perlman & Co., Memphis, Tenn., has been appointed chairman of the Public Relations Committee of the Institute of Scrap Iron & Steel Inc., Washington.

—o—

William M. Lappe has been named personnel director of the Washington Steel Corp., Washington, Pa. Formerly supervisor of progress for the organization, Mr. Lappe had been previously connected with the Canonsburg Steel & Iron Works, Canonsburg, Pa.

—o—

Peter V. Martin has been appointed sales manager of the metallurgical department of the Engineering & Construction Division, Koppers Co. Inc., Pittsburgh.

—o—

Leo J. Perrette, Kennametal Inc., Latrobe, Pa., has been appointed a repr sentative in the Cincinnati district a will have headquarters in that city. Har **W. Bearfoot** has been transferred fro the Philadelphia office of the compa to the Pittsburgh office where he w serve as a representative.

—o—

Donald B. Fairchilds has been appoin ed sales promotion manager, Cincinna Mfg. Co. and the Cincinnati Fly Scree Co., subsidiaries of the F. C. Russell Co Cleveland. He has been associated wi Jack & Heintz Precision Industrie Cleveland.

—o—

William E. Rutz, vice president a manager, Giddings & Lewis Machi Tool Co., Fond du Lac, Wis., has be elected president of the Fond du L chapter, American Society of Tool Eng neers. **George Tegen**, supervisor of pr duction methods and tool design at Gi dings & Lewis, has been elected fi vice president.

—o—

James S. Allan, president, Walker Mf Co., Racine, Wis., has been re-elect president of the Manufacturers As ciation of Racine.

—o—

C. M. Robertson, Milwaukee attorn has been elected chairman of the boa of Crittall-Federal Inc., Waukesha, W **R. C. Mixter** has been named preside and general manager. Others elected a **R. E. Huppert**, vice president, secreta and treasurer; **W. M. Martin**, vice pre dent-sales, and **Miss Florence Keebl** assistant secretary. **M. A. Jacobson** a director.

—o—

Paul Nesbit has been elected secreta treasurer of Consolidated Industries In Lafayette, Ind. He succeeds **R. G. H big** who has resigned. **W. W. Timm** formerly general sales manager of t Heating Division of the American Rad tor Corp., has been named general sa manager.

—o—

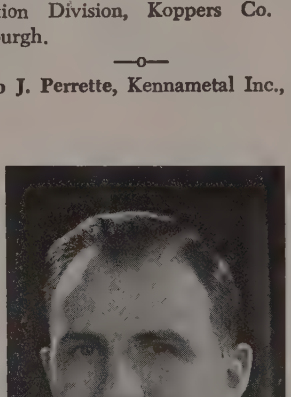
Richard L. Erlin has been promot to manager of rolled steel products sal Kaiser Co. Inc., Iron & Steel Divisi Oakland, Calif. He is succeeded general sales service manager by **O.** Hole Jr. who recently joined the divisi

—o—

F. Rudolph Meyer recently was pointed district sales manager at Louis for the Granite City Steel C Granite City, Ill. In the Jan. 20 is of STEEL it was erroneously reported M Meyer had been appointed sales m ager of the company.

—o—

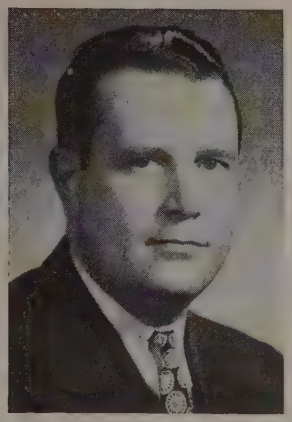
George L. Sturm, vice president, M dletown Iron & Steel Division, David



JAMES G. GAMMEL
Sales promotion and advertising manager, Brush Division, Osborn Mfg. Co., Cleveland. Noted in STEEL, Feb. 24 issue, p. 70

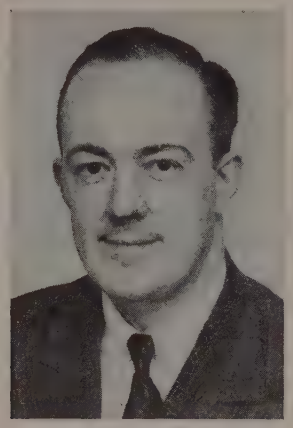
WILLIAM V. BUSH

ected president, Detroit Sheet Metal Works, etroit. Noted in STEEL, Feb. 24 issue, p. 70



M. V. CORNELL

Sales manager, Marion Power Shovel Co., Marion, O. Noted in STEEL, Feb. 24, p. 66



JAMES P. BATES

Chief metallurgist for the Hyster Co., Portland, Oreg. Noted in STEEL, Feb. 24 issue, p. 70

seph Co., Cincinnati, has been appointed chairman of the Brokers Committee of e Institute of Scrap Iron & Steel Inc., Vashington. **Lee J. Workum,** Hickman, Villiams & Co. Inc., Cincinnati, has been amed chairman of the Finance Committe of the institute.

—o—

H. A. Roemer Jr. has been elected vice esident, Sharon Steel Corp., Sharon, Pa. He is president of Detroit Seamless Steel Tubes Co., a wholly-owned subsidiary of Sharon Steel Corp., and will retain that position, with headquarters in Detroit.

—o—

Arthur I. Appleton, executive vice president, Appleton Electric Co., Chicago, has been elected president. He succeeds his father, **Albert I. Appleton,** who has been elected chairman. **John A. Appleton** has been elected vice president and **H. M. Schlobaum,** secretary.

—o—

Edward L. Patton, Pittsburgh Plate Glass Co., Pittsburgh, has been appointed consultant on glass advertising. Formerly glass advertising and sales promotion manager, he is succeeded by **Robert Wardrop.**

OBITUARIES . . .

Samuel S. Wales, 76, formerly chief ectrical engineer of all plants of the arnegie-Illinois Steel Corp. until his tirement in 1932 from that corporation, ed recently. Mr. Wales became asso ated with the Youngstown Welding & ngineering Co. as assistant to the presi nt and plant engineer, following his tirement from the steel corporation. He d served as president of the Associa on of Iron & Steel Engineers in 1927, d was a member of the board of di ctors for several years.

—o—

James Foster-Smith, 66, managing dictor of the Wellman Smith Owen Enneering Corp. Ltd., died recently at s home in London, Eng. He had dicted that corporation for more than years.

—o—

Charles F. Goedke, president, Ganschow ear Co., Chicago, died Feb. 20. Long tive in the American Gear Manufacrers Association, Pittsburgh, he served president in 1939-40.

—o—

E. E. Walker, 65, president, Walker orp. and Van Products Co., Erie, Pa., nd former head of the Erie Malleable on Co., died at his home in Erie, Feb.

—o—

George P. Bump, 77, founder of the predecessor of the present Bump Pump Co., La Crosse, Wis., died at his home at Dakota, Minn., recently.

—o—

J. Raymond Cox, safety director at the Beloit plant of Fairbanks, Morse & Co., Chicago, died Feb. 19. Active in civic affairs in Beloit, Mr. Cox was president of the city council.

—o—

Henry L. Randall, 55, president, Riverside Metal Co., Riverside, N. J., died recently. Before joining the Riverside Co. in 1916, he had been associated with the American Brass Co. He served, during the war, as a member of the brass mill advisory committee of the WPB.

—o—

John H. Allen, 89, president, Everlasting Valve Co., Jersey City, N. J., formerly the Patterson-Allen Engineering Co., of which he had been founder, died recently at his home in Orange, N. J.

—o—

Louis D. Huntoon, professor of mining and metallurgy, Sheffield Scientific School, Yale University, and formerly a consulting engineer in New York, died Feb. 22.

—o—

Edgar G. Pascoe, senior partner in the Southern Amiesite Co., Birmingham, died Feb. 20.

—o—

James E. Wilkerson, structural engineer, Wilbur Watson & Associates, Cleveland, died recently at his home in Cleveland. He had formerly been on the engineering staff of the Austin Co. and with Arthur G. McKee & Co.

—o—

Anthony C. Anderson, 63, comptroller of General Motors Corp., Detroit, died Feb. 22.

—o—

Dr. Harry Clo, 65, head of the research department, A. Schrader's Son Division, Scovill Mfg. Co. Inc., Brooklyn, N. Y., died recently.

—o—

H. R. Grant, for many years president of the Allen Mfg. Co., Hartford, Conn., died in that city recently.

—o—

John H. Walters, 62, president, Marlin-Rockwell Corp., Jamestown, N. Y., died Feb. 21.

—o—

Charles E. Reichenbach, 65, assistant treasurer, Pittsburgh Steel Co., Pittsburgh, died at his home in Pittsburgh Feb. 23. He had been associated with the company for 45 years.

—o—

Patrick J. Sheehan, general manager of the Niles Fire Brick Co., Niles, O., died recently.

—o—

Henry H. Hardinge, 83, co-founder of the Hardinge Oil Burner Mfg. Co., Chicago, and Hardinge Bros. Inc., Elmira, N. Y., died Feb. 22 in Evanston, Ill.

In this first of two articles, the author presents fundamental information of practical value to heat treaters as well as to the user of high speed steel tools

Heat Treatment of HIGH SPEED STEELS

HIGH SPEED steels probably have received more attention and scie tific research over a period of several decades than any other cla of steels. Industry has demanded such extended research wo for two reasons: (1) Fabrication of parts from highly alloyed and he treated materials has increased the requirements for the quality of too and (2) the cost of a product is often influenced to a great extent b the life of the tools. Premature failure of a tool through breakage excessive wear will often times cost more than hundreds or even tho sands of the final parts which the tool is producing. To produce too which will satisfactorily fulfill the requirements of present day industr as well as to meet anticipated increased requirements of the future, it necessary that research work be continued so that tool engineers, met lurgists and heat treaters in the manufacturing plants will be equipp with latest information and can intelligently apply their knowledge the design, heat treatment and use of the high speed steels.

To obtain maximum performance from tools it is first necessary th those responsible for making the tools have full knowledge of such r quirements as: Composition, microstructure and hardness of the m terial which is to be processed as well as the finished requirements, d mensional tolerances, etc., of the parts being fabricated. After desig ing the tool properly, careful selection of the material comes next. the tools require properties capable of being obtained only by the u of high speed steel, it then becomes necessary to select the correct o since there are a number of very different compositions available whi fall into the high speed steel class. After the tool has been made, t metallurgical engineer must provide the heat treatment which will n only meet the requirements of resistance to breakage and wear, but al keep to a minimum any deformation attendant with the heat treatme

Purpose of this article is actually two fold: First, to give the r sults of an exhaustive study of the properties obtainable from three d ferent types of high speed steels. Two of these are and have been w known to the industry for many years while the third is a somewh newer composition, but one which shows considerable possibility of me ing future requirements. Second part of the two fold purpose is attempt to stimulate further research by other investigators, so that will benefit from the results.

All results published herewith, incidentally, are given exactly as o tained, but then they are based on somewhat limited research so th further work might prove that some of the statements made in the f

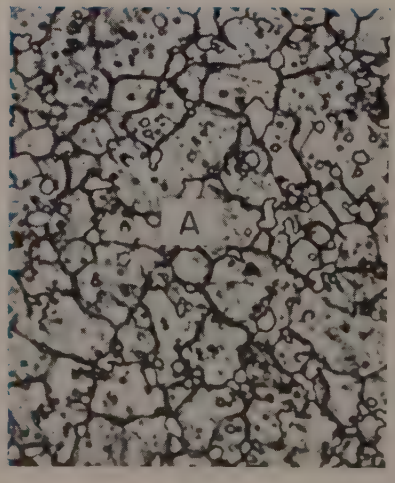


Fig. 1—Structures of Type B steel shown in A through D resulted from austenitizing at 2200°, 2250° 2300°, and 2350° F. Eutectic melting has started at 2350° F as shown in 1-D. X 1000

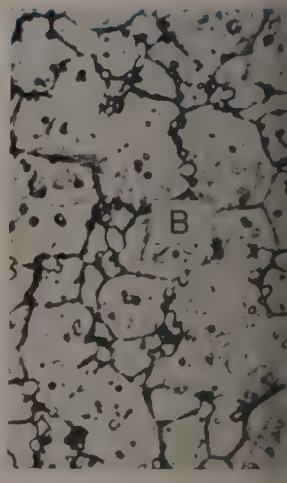


Fig. 2 — Photomicrographs A through E are Type C specimens austenitized in steps of 50° F from 2100° F through 2300° F. Photos B and C indicate that optimum austenitizing temperature is apparently 2150°-2200° F. X 1000

By HOWARD E. BOYER
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American Bosch Corp.
Springfield, Mass.

wing paragraphs would require modification.

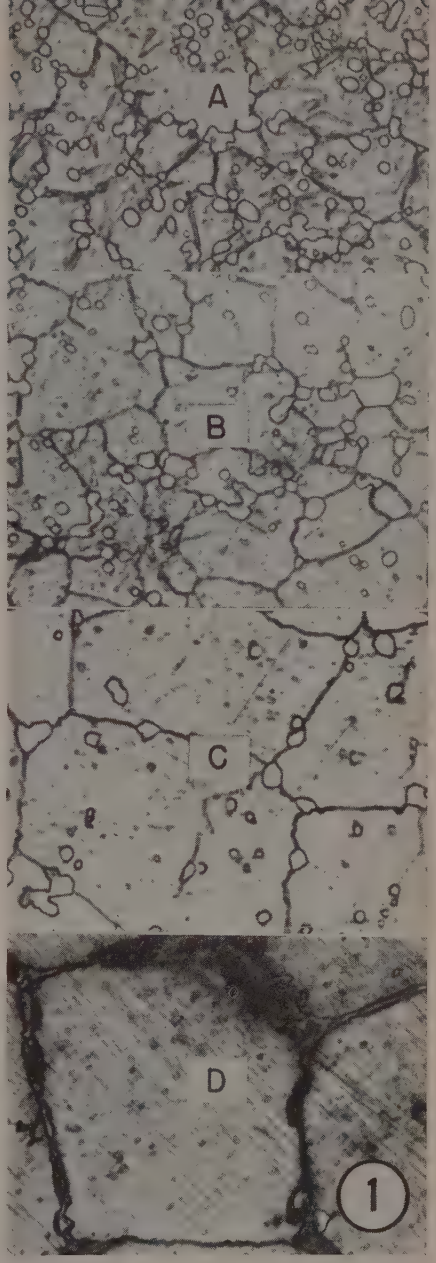
Many test results published with this article have been previously ıblished by other investigators, but in order that a more complete in-estigation could be made it was necessary to start from the beginning ıd re-check all other previously reported results. All technical data ported herewith was based on test specimens machined from ¾-in. ameter annealed bars to 0.575-in. diameter and 2 in. long. Test speci-ens were heated in a Sentry furnace using the Diamond Block to eate a protective atmosphere. Tempering was done in a convection r type of furnace. Measurement of the percentage of the alpha and mma phases was done entirely by the magnetic principle, that is, tak-g advantage of the magnetic and nonmagnetic properties of alpha ıd gamma (austenite) respectively.

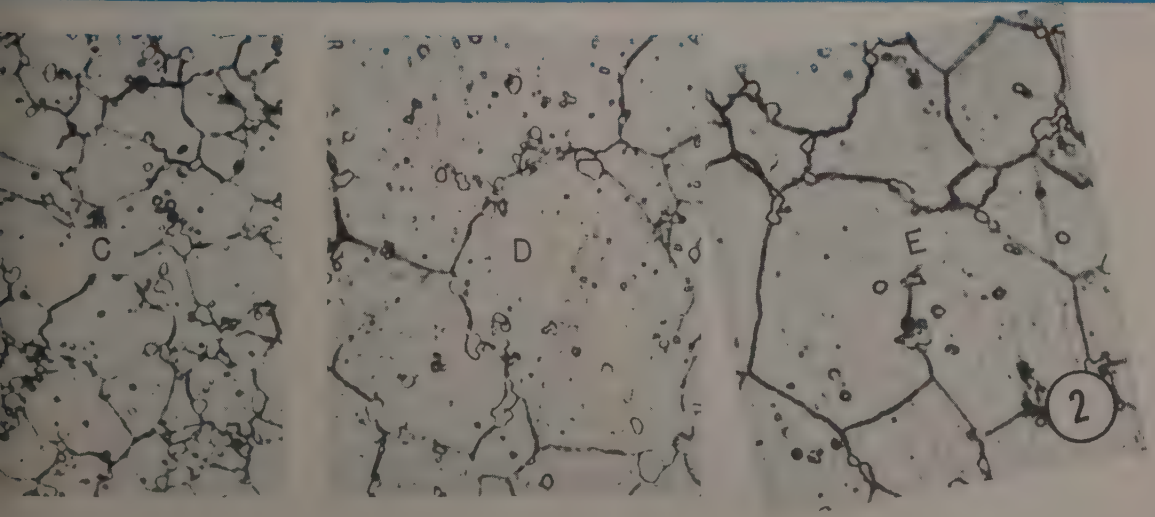
While most metallurgists and heat treaters are familiar with the sic facts in connection with high alloy steels such as the high speed pes, it is probable that there are also many readers who would not early understand some of the information given later in this paper ithout a brief review of some of these basic principles.

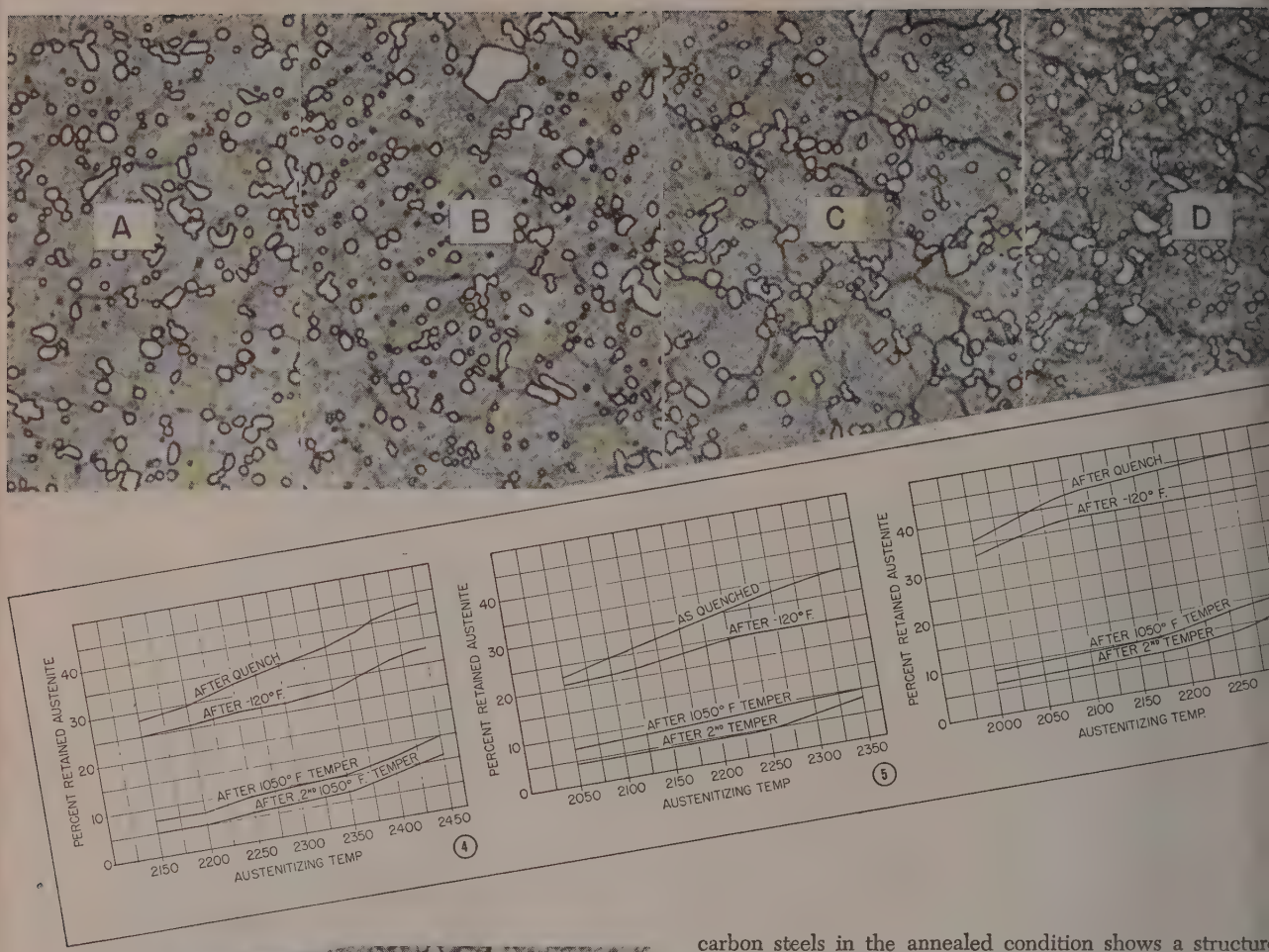
First, it is necessary to consider the composition of high speed steel. his varies over quite a wide range and incorporates several dozen dif-rent combinations of carbon, silicon, manganese, tungsten, molybde-m, chromium, vanadium, and cobalt. While the carbon content of ost high speed steels is in the range of 0.65 to 0.85 per cent, it is often r special purposes as low as 0.50 per cent and as high as 1.10 per nt. The other elements are also varied in order to impart to the steel rtain capabilities. For this study, it was of course impossible to ex-mine all members of this family of steels, so that three were selected. ble I shows the composition of the three different steels. These three fferent compositions will henceforth be referred to as Types A, B or C.

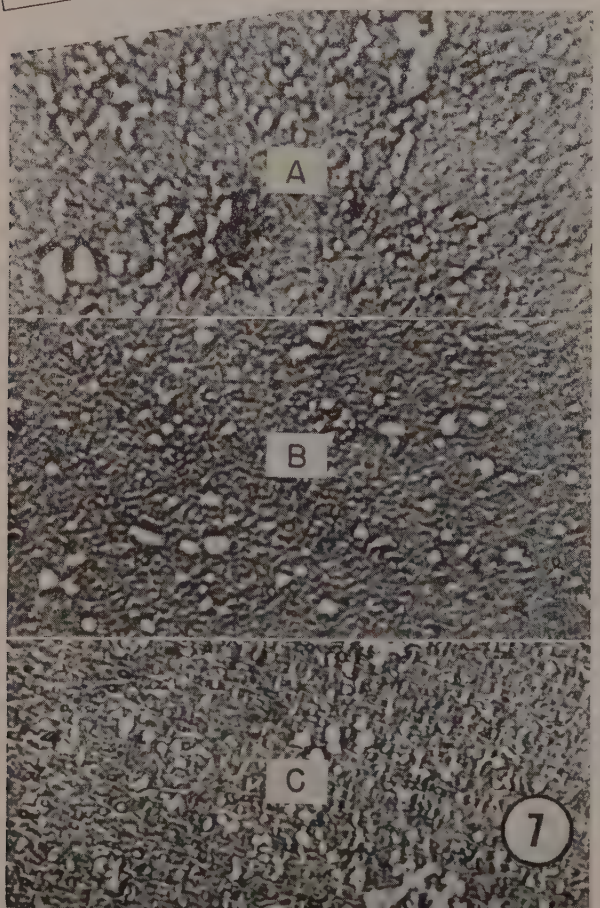
It will be noted that Type A is one usually regarded as a general rpose steel of the 18-4-1 class and one of the oldest and most used. ype B is a tungsten-molybdenum composition which is also a general rpose high speed steel. This type has been on the market for many ars though its popularity was greatly increased during World War II, ue to the tungsten scarcity. Type C contains a high percentage of balt and is intended for special heavy duty cutting applications.

Behavior of high speed steels in heat treatment can be most easily derstood if we compare the microstructures at various steps to straight rbon or low alloy steels. Microscopic examinations of 1.00 per cent









carbon steels in the annealed condition shows a structur composed of spheroidal carbides dispersed in a ferrit matrix. Microstructure of high speed steels in the an nealed condition appear much the same as illustrated i A, B, and C of Fig. 7. Fig. 7-A shows the annealed struc ture of Type A steel at X 1000; likewise B and C show Types B and C, respectively, in the same condition. I will be noted that the carbides in Type A are somewha larger than those in Types B and C.

It is not true that the carbide size is always greater i the steels containing the higher percentages of tungsten though it is not unusual. It has been the experience o the author in the microscopic examination of many speci mens of high speed steel that it was the tendency of th 18 per cent tungsten types to possess the coarser carbides This fact probably accounts for the relative sluggishnes of the high tungsten types to respond to certain hea treatments—this will be discussed later in this article.

While the microstructures of the high speed steels d appear very similar to a straight carbon steel there is ac tually a great difference. First, the carbide in a straigh carbon steel is Fe_3C, while that in the high speed steel is mostly of a complex type. Second, the ferritic matri in case of the carbon steels is very nearly pure iron whil the matrix of the high speed steels contains high percent ages of the alloying elements in solid solution. As tem peratures are elevated the difference in behavior of th carbon compared to the highly alloyed steels become much more marked.

The structure of a straight carbon steel heated to abou

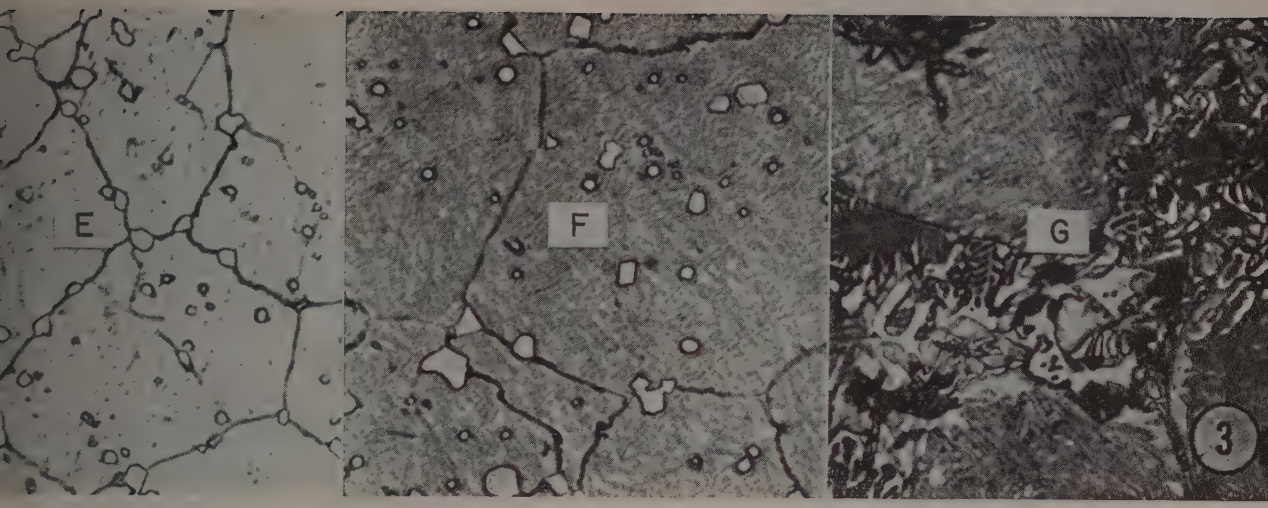


Fig. 3—Microstructure of Type A high speed steel austenitized in steps of 50° F from 2150° F (Fig. 3-A) through 2450° F (Fig. 3-G). X 1000

Figs. 4-6—Charts showing the retained austenite as a function of the austenitizing temperature for Types A, B, and C, respectively

Fig. 7—Microstructure of annealed high speed steels of Types A, B, and C, which are, respectively, of the 18-4-1, tungsten-molybdenum, and high cobalt compositions. X 1000

25° F is composed of austenite plus some undissolved
bide. To harden such a steel completely it is neces-
y to dissolve only about 0.60 per cent carbon; Fe_3C
solves very readily in the iron matrix upon heating and
ewise transforms from the austenite very rapidly upon
ling. When such a steel is cooled with sufficient ra-
ity to suppress the transformation to pearlite, the re-
ting microstructure is martensite, undissolved carbide
l small percentages of retained austenite (usually only
5 per cent in a plain carbon steel water quenched from
25° F). Hardness of a 1.00 per cent carbon steel after
h a treatment will be rockwell C 65 - 67. When such
teel is reheated above 250° F the hardness rapidly de-
ases as the tempering temperature of the steel is in-
ased.

When high speed steels are heated to about 1450° F
average temperature which varies with the composi-
) it also becomes austenitic and the complex carbide
ins to dissolve though very slowly at this relatively
temperature because the complex carbides are all far
e insoluble than Fe_3C. In order to obtain sufficient
ide solution so that full hardness will subsequently
lt, it is usually necessary to heat such steels to very
r their fusion point. High speed steels being very re-
ant to transformation on heating are likewise reluctant
ransform on cooling, so that it is not usually necessary
ool in any medium which removes heat any faster than
air to suppress the formation of pearlite. The micro-
ucture after cooling to room temperature consists of mar-
site which has decomposed from the austenite, undis-
solved carbide and high percentages of retained austenite.

The percentages of these various structures after cooling to room temperature are very much a function of the high temperature (hereafter referred to as austenitizing temperature) and to some extent the time at temperature, though the effect of the latter is far less marked. As the austenitizing temperature or time at temperature is increased more carbide dissolves in the austenite and at the same time the size of the austenitic grain increases. After cooling to room temperature the percentage of retained austenite increases and the amount of undissolved carbide decreases as the austenitizing temperature is increased. Figs. 4, 5 and 6 are charts showing the retained austenite as a function of the austenitizing temperature for Types A, B and C respectively.

The curve uppermost on the charts (the lower curves will be discussed later) shows the percentage of retained austenite as measured at room temperature after having been air cooled from the various temperatures as indicated on the horizontal axis. It may be noted that Type A, Fig. 4 retains about 28 per cent when austenitized at 2150° F, but increases to about 43 per cent when austenitized at 2450° F. Type B steel, which has a somewhat lower fusion point, was austenitized in steps of 50° F over the temperature range of 2050° F to 2350° F. The results of measurements made after the specimens had cooled to room temperature are shown in the uppermost curve of Fig. 5. This type obviously has less tendency to retain austenite than Type A, since it shows only about 23 per cent after austenitizing at 2050° F and increases to a maximum of 35 per cent after being heated for the same length of time at 2350° F.

Specimens of Type C were also austenitized in steps of 50° F over a 300° F range of 2000° F - 2300° F inclusive. As might logically be expected from a steel containing a high percentage of cobalt, the tendency to retain austenite increased. It has long been (*Please turn to Page* 138)

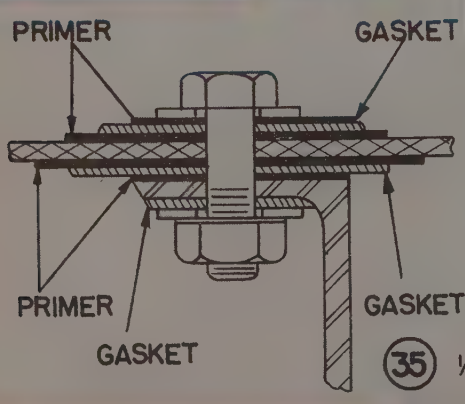
TABLE I
COMPOSITION OF HIGH SPEED STEELS USED FOR STUDY

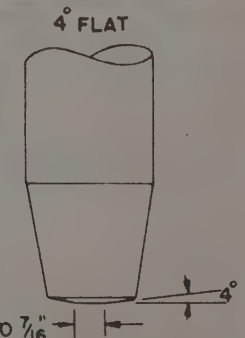
Designation	C	W	Mo	Cr	V	Co
TYPE "A"	0.73	17.95		3.90	1.10	
TYPE "B"	0.82	6.50	5.20	4.20	1.90	
TYPE "C"	0.76	4.36	5.42	4.17	1.29	11.75

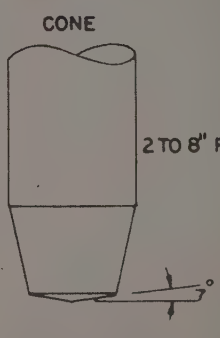
RIVETING AND SPOTWELDING Magnesium

By ALLEN G. GRAY
Consulting Editor, STEEL

Effective fastening procedures involve use of modern equipment and understanding of a few fundamental principles detailed here







Alloys

RIVETING, in magnesium alloys as in aluminum ys, is still the most widely used joining method for eral assembly work. Aluminum alloy (usually 56S) ets are used for practically all riveting on magnesium ictures.

This alloy has a low potential in contrast with magne- m alloys and effectively prevents galvanic corrosion. S rivets are not heat treatable and should be procured the temper required. 56S-¼h rivets are recommended ept where the fastener is to be used in dimpled sheet, which case 56S-0 rivets are normally used. It is not essary to insulate these materials from the magnesium. In cases where assembly conditions are of a nature ich makes it difficult to drill the rivet holes and ma- ne countersink the sheet before chemical treating and ming, the rivet is often used in direct contact with the gnesium without trouble. Rivets are always anodized ore use to provide better paint adhesion. Steel, cop- , brass, and other heavy metal rivets, fittings, bolts, s, etc. are not used on magnesium alloys due to danger galvanic corrosion, unless they are cadmium or zinc- ted and insulated with zinc chromate compound or er sealing material.

Design of Riveted Joints: Rivet length for a given grip magnesium is usually made slightly less than for aluminum when using flat type bucktails. A thorough investigation on the effect of bucktail sizes has proved that full strength joints can be developed with bucktails driven to a minimum height of 0.4 times the rivet diameter and a minimum diameter of 1.33 times the rivet diameter. Correct size bucktail is obtained by selecting a rivet length which projects 1 to 1.25 times the rivet diameter before driving.

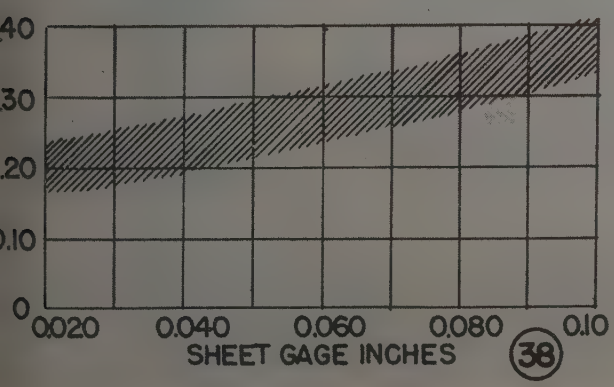
Investigation of sheet alloys shows that an edge distance of 2.5 times the rivet diameter, measured from the center of the hole to the edge of the sheet, is adequate to prevent cracking or bulging in the edge of the sheet when the rivet is driven and has given maximum strength joints. Rivet diameter of approximately three times the sheet thickness usually will result in a well balanced design. Smallest rivet ordinarily employed has a diameter approximately equal the thickness of the thickest sheet used. Use of a large number of small rivets rather than a few of large diameter is preferred. The recommended minimum spacing for rivets is approximately three times the rivet diameter; maximum spacing is largerly dependent upon the type of structure and its design.

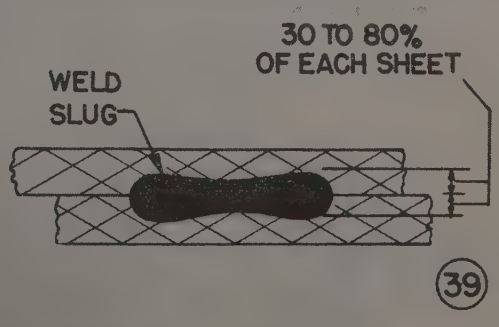
Riveting Procedure: Standard rivet squeezers and pneumatic hammers used in riveting aluminum are satisfactory for magnesium alloys. Choice of equipment is determined by the nature of the structure being riveted. Exhaustive test work showed little difference in the quality of work produced by either method. Rivets must be driven squarely, and care taken not to allow the header to dent the sheet.

Both drilling and piercing methods are used to make rivet holes in magnesium alloy sheet. Drilling is preferred for highly stressed parts subject to fatigue as piercing results in a flaky edge, especially in hard-rolled sheet thicker than 0.04-in. While standard 118 degree point angle drills can be used for drilling sheet satisfactorily, better results are obtained by using the same drill sharpened to a 60 to 80 degree included angle with web thinned and corners rounded. Standard countersink tools such as those employed for aluminum alloys are also generally used for magnesium alloys. (*Please turn to Page* 142)

Fig. 33—*Proper assembly of magnesium to magnesium assemblies*
Fig. 34—*Magnesium riveted to dissimilar metal*
Fig. 35—*Magnesium bolted to dissimilar metal or to wood*
Fig. 36—*Spot welding aircraft oil tanks*

Fig. 37—*Electrode tip contours for spot welding magnesium*
Fig. 38—*Spotweld diameters recommended by Dow Chemical for M, J, and FS sheet*
Fig. 39—*Cross section of good spot weld in magnesium*





Control of Vibration Can Increase Production Efficiency

In this final article on vibration control, products and methods of application recommended by seven additional manufacturers serving this field are discussed

By JOHN PARINA, JR.
Associate Editor, STEEL

TOLERENCES are being narrowed and surface finishes on nearly all finished products are in a continuous state of refinement while speeds of production machinery are being pushed to ever higher limits. It is evident, therefore, that until a perfectly engineered and assembled vibration-free machine is made, the manufacturer can very easily find himself "betwixt and between" obtaining the finish demanded by his market, and maintaining maximum production at lowest cost.

Fortunately, various devices have been developed which provide a very workable solution to the problem of controlling vibration. Their usefulness is gaining increased recognition as can be easily attested by studying the many available case histories. In this series of articles the survey that has been made was not from point of view of attempting to solve any and every problem involving vibration nor was it to list "catalog-fashion" all material made for this purpose; rather, it is intended to indicate how these problems can be solved, who some of the co panies are in this field of vibration control, and to in cate what materials are available for the various con tions encountered.

The following continues the survey of makers, metho and materials of vibration isolation.

Lord Mfg. Co., Erie, Pa., cautions that success in vib tion control is dependent upon the proper selection mountings accurately related to the load and to vibrat forces and frequencies encountered. The proper mou ing having been determined, subsequent success is depe ent upon the uniformity of the mountings installed. U formity is important both for the initial functioning of

Fig. 29 — Isolation efficiency for any flexible mounting system. (Lord Mfg. Co.)

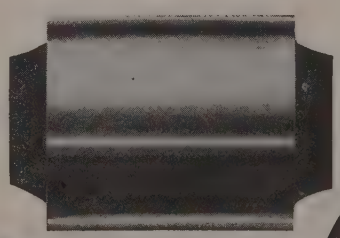
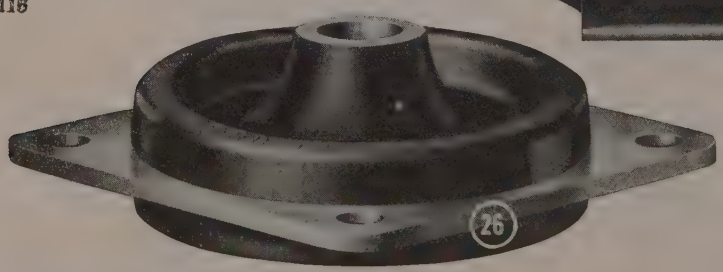
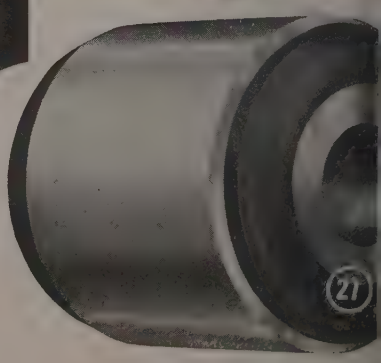


Fig. 26—Mountings used for the control of normal vibratory action. (Lord Mfg. Co.)

Fig. 27—Mountings recommended by Lord for conditions where large amplitudes are occasionally produced by shock or resonance

Fig. 28—Relationship between static deflection and natural frequency. (Lord Mfg. Co.)





nounting and the continuation of efficient operation.

For efficient vibration control a mounting must have high degree of softness (low spring rate) and must pro-ide reasonable stability. Two classes of mountings are roduced by Lord; non-snubbing and snubbing. For in-ustrial application, where shock or resonance is not en-ountered, the non-snubbing type of mounting is recom-ended. Where the mountings are subjected to abnormal onditions of shock, shear type mountings having means or vertical snubbing are recommended. Vertical snub-ing mountings are applicable to industrial equipment and re made in a series of sizes in two designs, plate form nd tube form.

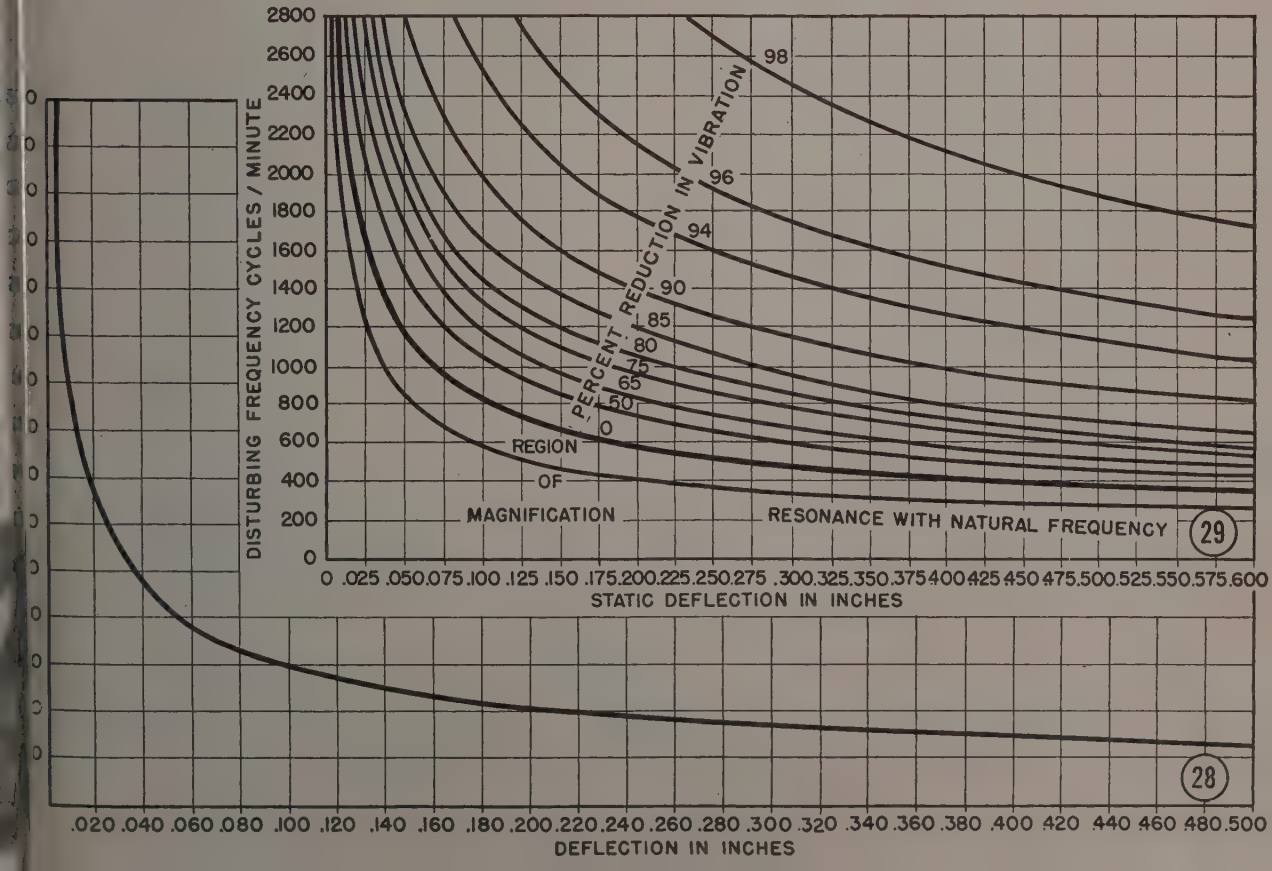
Primary function of flexible mountings of both snubbing nd non-snubbing types is to control normal vibratory ovement, and in the case of snubbing type mountings control, also, transient vibrations of larger amplitude duced by shock loads. Normal vibration is an alternat-g movement which follows a fixed pattern or wave form ver a given interval of time and then continuously re-eats itself. For the control of normal movement only, ountings illustrated in Fig. 26 are the most practical.

Transient vibration is the type of movement which re-lts from a sudden force or shock instead of from a con-antly repeating force. It is generally associated with uch larger amplitudes than normal vibration, and each cle of movement does not duplicate the pattern of the revious cycle, but diminishes in amplitude until the ansient vibration disappears. For the control of any bration system, where large amplitudes are occasionally roduced by shock or resonance, the mountings illustrated Fig. 27 are generally recommended.

A method has been developed whereby snubbing is introduced into a system where occasional overloads are very large and which would exceed the capacity of the snubbing mountings shown in Figs. 26 and 27. The mount used for such conditions is the non-snubbing type with separate rubber snubbing washers placed on both extensions of the center metal member. This system, which can be used on industrial assemblies, prevents metal-to-metal contact at peak amplitudes, with the action being one of cushioning rather than quick snubbing.

For convenience in working with simple linear vibrations, the formulas for transmissibility and the natural frequency of simple vibration (given in the first article of the series) have been plotted into curves. Fig. 28 gives the natural frequency of a suspension when the deflection is known, or vice versa; Fig. 29 illustrates the percentage of isolation obtained in a suspension for any combination of static deflection and disturbing frequencies. The load rating figures given in Tables XI, XII, XV, XVI, for plate form, tube form, vertical snubbing plate form and vertical snubbing tube form mountings designate the load which a mounting will carry for a predetermined axial deflection and for free operation in shear.

MB Mfg. Co. Inc., New Haven, Conn., believes that in many instances the procedure has been to select mounts based on a rated load and static deflection without giving due consideration to placement of mounting points and relative stiffness of the mount in various directions. This method considers only one mode of motion, one direction for the disturbing force, and no dynamic coupling. Such simple conditions are rarely found. The advantages of using units in the design of a suspension having controlled flexibilities in all directions is illustrated by the following problem: Weight of the body is 1320 lb, disturb-



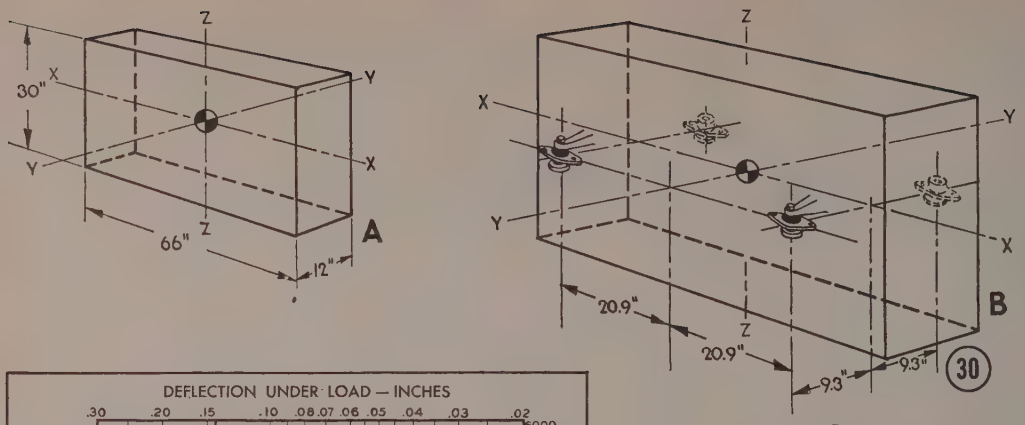


Fig. 30—(A) ordinates used the vibrating b (B) Placement mounts. (MB Co.)

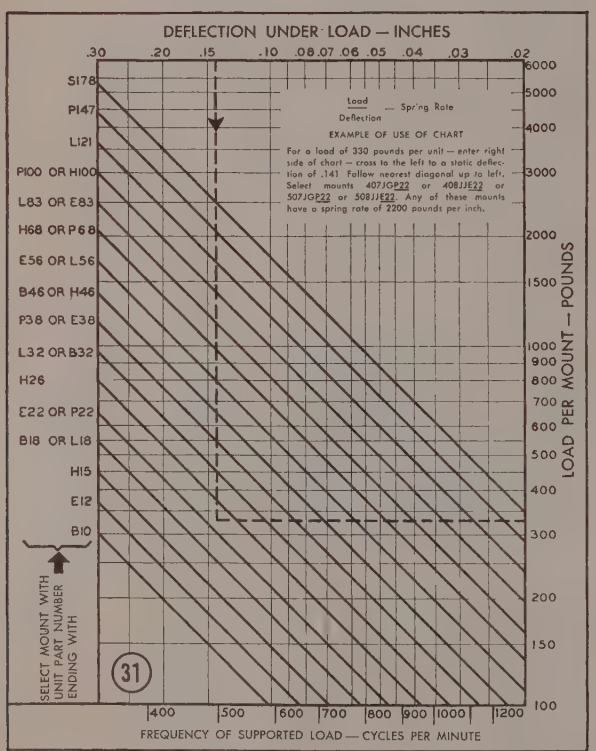


Fig. 31 — Selector chart for MB Mfg. Co. compression type isolators

ing frequency is 1800 cpm. Solution of the problem is tained as follows:

(1) Determine the center of gravity of body. Ce of gravity is determined by calculation, by test, or by e mate.

(2) Set up co-ordinate system having three mutu perpendicular axes passing through the center of grav The X, Y, and Z co-ordinates are shown in Fig. 30(

(3) Compute the mass of the body.

$$\text{Mass} = \frac{\text{Weight}}{\text{Gravity acceleration,}}$$

$$\text{therefore } M = \frac{1320}{386} = 3.42 \frac{\text{lb sec}^2}{\text{in.}}.$$

(4) Determine radii of gyration of the body about e of the three axes. Calculate from detail drawings or e mate. For homogeneous rectangular prism, which proximates many practical bodies.

$r_x = \frac{M}{12}(y^2 + z^2)^{1/2}$; for example, $r_x = 0.288\ (12^2 + 30^2)^{1/2}$ 9.3 in.

$r_y = \frac{M}{12}(x^2 + z^2)^{1/2}$; for example, $r_y = 0.288\ (66^2 + 30^2)^{1/2}$ 20.9 in.

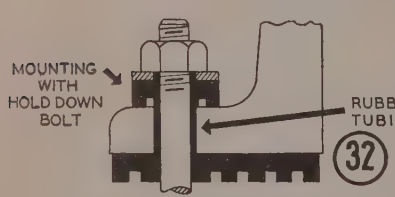


Fig. 32—Method suggested by MB Mfg. Co. for install ing pads when hold down bolts are required

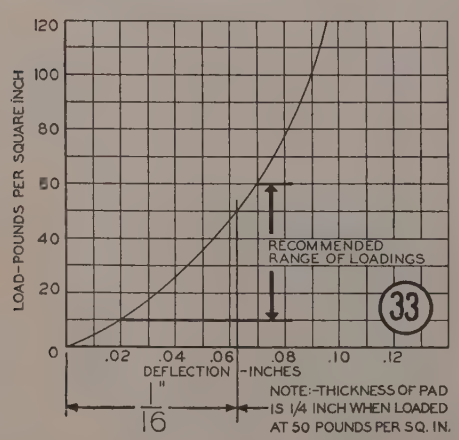
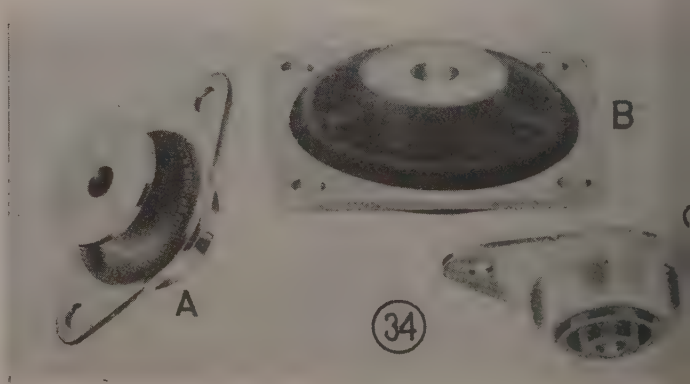


Fig. 33—Load deflection curve for the 5/16-in. thic MB pad

Fig. 34—Compression type unit with flange shown i (A); (B) and (C) are, respectively plate and hange styles. (MB Mfg. Co.)

Fig. 35—Method of installing MB cylinder mounts



$= \frac{M}{12}(x^2 + y^2)^{1/2}$; for example, $r_z = 0.288\ (66^2 + 12^2)^{1/2} =$ .3 in.

(5) Locate the proper points at which to support the dy with units. Locate the points in a plane formed r the axis having the largest radius of gyration and the is having the smallest radius of gyration. Axis X has nallest radius of gyration, axis Y the largest. Mounts e therefore located in plane X-Y. Locate the points at distance from each of the axes equal to the radius of ration about that axis, if possible. Mounts are located a distance $d_x = r_x = 9.3$ in. from the X axis, and $d_y =$ = 20.9 in. from the Y axis. For simplest design, four ounts of identical properties are placed symmetrically out the Z axis as shown in Fig. 30(B).

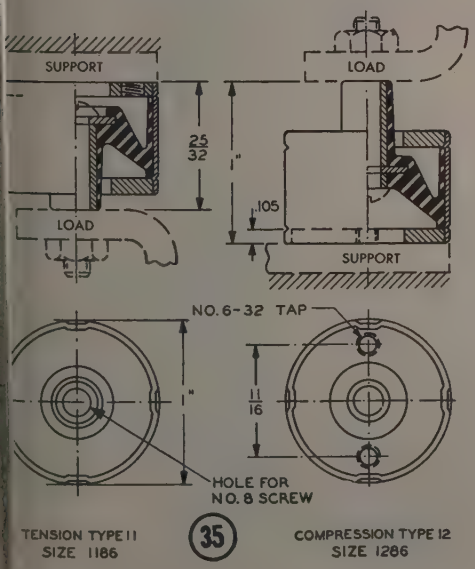
(6) Determine the required natural frequency of the spension, and the load per mounting point. For vibraon isolation the suspension frequency should be not reater than one half the exciting frequency; lower susension frequencies will provide improved isolation. In e present problem the suspension frequency must be not reater than f = 1800/2 = 900 cpm; 500 cpm will proide better isolation, and is practicable. Load per mount : Total weight, pounds/Number of mounts = 1320/4 = 30 lb per mount.

(7) Select the proper units by use of chart (Fig. 31) nd determine deflection of units under applied load. Seector chart (Fig. 31) shows by example the proper mount o use for obtaining a frequency of 500 cpm. Enter at ottom of chart at a frequency of supported load of 500 pm. This corresponds to a deflection under weight of he supported load of 0.141-in. as read vertically above. Mount selection is made as illustrated by the example on he chart.

(8) Calculate all natural frequencies of the body. Thus,

along z axis (vertical) = 500 cpm by selection.
along Y axis (lateral) = 500 cpm.
along X axis (fore and aft) = 500 cpm.

ig. 36—Sleeper chair used for supporting floors. (United States Gypsum Co.)



f about X axis (roll) = $500 \frac{d_x}{r_x} = 500$ cpm, through making $d_x = r_x$

f about Y axis (pitch) = $500 \frac{d_y}{r_y} = 500$ cpm, through making $d_y = r_y$

f about Z axis (yaw) = $\frac{(d_x^2 + d_y^2)^{1/2}}{r_z} = 590$ cpm.

The company designates as Isomode units the following styles of isolators: Types 4 and 5; type 10 pad; types 11 (tension) and 12 (compression) cylinder units; hanger unit type 13; and, plate unit type 17. With the exception of the pad, these mounts are of the bonded rubber type.

The type 10 is designed to reduce vibration transmitted from machinery and motor driven equipment such as grinders, ball and roll mills, presses, business machines, fans, pumps and blowers. The 5/16-in. thick pad is constructed of oil resistant synthetic and is furnished in standard size squares of 6, 9, 12 and 18 in. In some cases

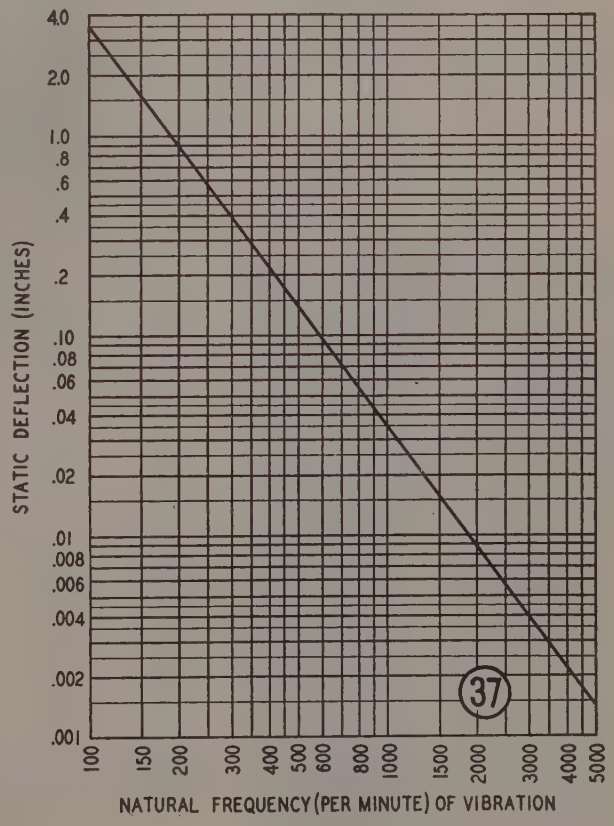
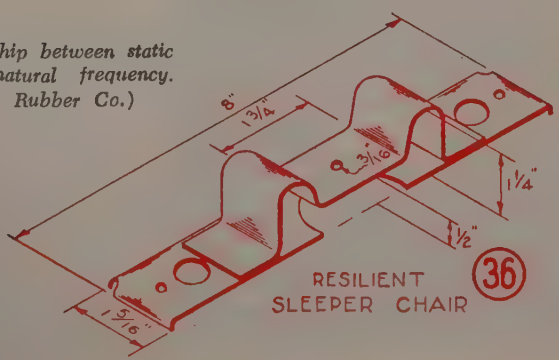


Fig. 37—Relationship between static deflection and natural frequency. (United States Rubber Co.)



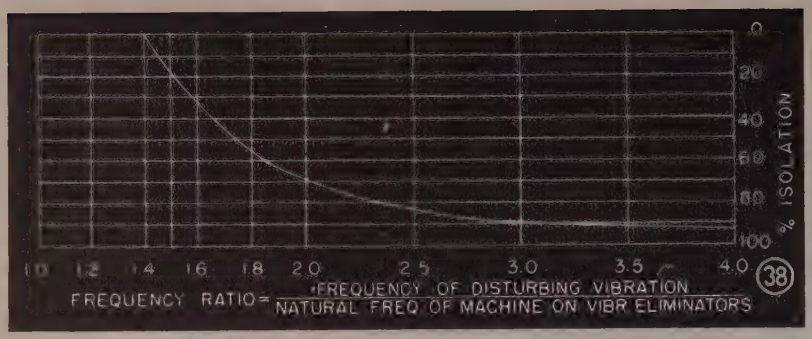


Fig. 38 — Frequency ratio and resulting isolation efficiency which can be used as a working formula for solution of vibration problems. (Vibration Eliminator Co.)

these pads can be used under machinery without the need for holddown bolts; for installations requiring holddown bolts, a second pad and metal washer are placed over the machine leg as shown in Fig. 32. Pads may be stacked in multiples of 5/16-in. thickness for increased isolation. The load deflection curve for a 5/16-in. thickness is given in Fig. 33.

Load ratings for types 11, 12, 13 and 17 are given in Tables XIII, XVII, XVIII. The industrial compression type unit is provided without mounting flange in style 4 and with mounting flange in style 5.

Fig. 39—Press isolated with natural cork plates and on arrangement of cork hold down units. (Vibration Eliminator Co.)

The latter is shown in Fig. 34(A); Fig. 34(B) and (C) illustrate the plate and hanger units. Fig. 35 illustrates the manner of using the cylinder mounts.

James H. Rhodes & Co., Chicago, supplies felt which can be used by industrial plants as a mounting for heavy equipment. Four densities of felt are available: Soft, medium, hard and rock hard. Standard size on sheet felt is 36 x 36 in., and in thicknesses from ⅛-in. to 3 in.

United States Gypsum Co., Chicago, makes a spring steel sleeper chair which is rated at 225 lb total working load per unit, and a natural frequency slightly under 8 cycles. These have been installed in industrial plants to reduce sound transmission and effect vibration isolation by mounting on the chair the entire floors supporting a battery of machines. In other applications, "sound-proof" rooms or offices have been built in noisy industrial areas by employing this type of structural isolation. Dimensions of this isolator mounting are given in Fig. 36.

United States Rubber Co., Mechanical Goods Division, New York, states that effectiveness of a resilient mounting is determined by the relationship between the natural frequency and the forced frequency to be insulated. Forced frequency divided by natural frequency is the insulation ratio, and the insulation ratio immediately indicates the effectiveness of the mountings, as shown in Table XIX. Where vibration must be almost entirely eliminated the insulation ratio should be 4 or more, thus requiring relatively large static deflections which usually means more costly mountings. Satisfactory results are usually obtained

TABLE XI
SPECIFICATIONS FOR PLATE FORM MOUNTINGS
(Lord Mfg. Co.)

Normal Rating ⅛-in. Defl.	Maximum Allowable Load lb	100 Series Part Nos. Square	Diamond	Round	Holder
1	1	100P1	100PD1	100PR1	100PH1
2	2	100P2	100PD2	100PR2	100PH2
3	3	100P3	100PD3	100PR3	100PH3
4	4	100P4	100PD4	100PR4	100PH4
		150 Series Part Nos.			
2	3	150P2	150PD2	150PR2	150PH2
4	6	150P4	150PD4	150PR4	150PH4
6	9	150P6	150PD6	150PR6	150PH6
8	12	150P8	150PD8	150PR8	150PH8
10	15	150P10	150PD10	150PR10	150PH10
12	18	150P12	150PD12	150PR12	150PH12
		200 Series Part Nos.			
10	20	200P10	200PD10	200PR10	200PH10
15	30	200P15	200PD15	200PR15	200PH15
20	40	200P20	200PD20	200PR20	200PH20
25	50	200P25	200PD25	200PR25	200PH25
35	70	200P35	200PD35	200PR35	200PH35
45	90	200P45	200PD45	200PH45	200PH45
		200X Series Part Nos.			
60	120	200XP60	200XPD60	200XPR60	200XPH60
75	120	200XP75	200XPD75	200XPR75	200XPH75
90	120	200XP90	200XPD90	200XPR90	200XPH90

TABLE XII
SPECIFICATIONS FOR PLATE FORM SNUBBING MOUNTS
(Lord Mfg. Co.)

Defl. Under Load, in.	Load Rating, lb	279 Series Part Nos. Square	Diamond	Round
	120	279P-120	279PD-120	279PR-120
	155	279P-155	279PD-155	279PR-155
	185	•279P-185	•279PD-185	•279PR-185
1/8"	220	279P-220	279PD-220	279PR-220
	250	279P-250	279PD-250	279PR-250
	280	•279P-280	•279PD-280	•279PR-280
	310	•279P-310	•279PD-310	•279PR-310
		281 Series Part Nos.		
	120	281P-120	281PD-120	281PR-120
	155	281P-155	281PD-155	281PR-155
	185	281P-185	281PD-185	281PR-185
3/16"	220	281P-220	281PD-220	281PR-220
	250	281P-250	281PD-250	281PR-250
	280	281P-280	281PD-280	281PR-280
	310	281P-310	281PD-310	281PR-310
		283 Series Part Nos.		
	120	283P-120	283PD-120	283PR-120
	155	283P-155	283PD-155	283PR-155
	185	•283P-185	•283PD-185	•283PR-185
1/4"	220	•283P-220	•283PD-220	•283PR-220
	250	283P-250	283PD-250	283PR-250
	280	283P-280	283PD-280	283PR-280
	310	283P-310	283PD-310	283PR-310

Mountings for lighter load are not listed here.

TABLE XIII
SPECIFICATIONS FOR TYPE 17 MOUNTS
(MB Mfg. Co. Inc.)

Part Number	Static Load in Pounds for deflection of 1/16 inch	1/10 inch	Corres. AN Part No.	AN8008 Size
171.08	0.5	Rated	AN8008-0	1
171.15	0.9	deflection	AN8008-1	
171.32	2.0	1/16"	AN8008-2	
171.46	2.9	for this	AN8008-3	
171.68	4.2	series	AN8008-4	
172.32	2.0	3.2	AN8008-5	2
172.68	4.2	6.8	AN8008-6	
1721.0	6.2	10.0	AN8008-7	
1721.2	7.5	12.0	AN8008-8	
1721.5	9.3	15.0	AN8008-9	
1721.8	11.2	18.0	AN8008-10	
1731.5	9.3	15.0	AN8008-11	3
1732.6	16.2	26.0	AN8008-12	
1733.2	20.0	32.0	AN8008-13	
1733.8	23.8	38.0	AN8008-14	
1735.6	35.0	56.0	AN8008-15	
1736.8	42.5	68.0	AN8008-16	
1738.3	51.8	83.0	None	
17310.	62.5	100.0	None	

where the ratio is 2.5 or slightly greater.

It is important to note that there are cases where, due to extraordinary resilience of the supporting floor or foundation, an insulation ratio considerably higher than 2.5 will be required. For instance a light wooden floor in a frame building is considerably more resilient than a concrete floor in a building of steel structure and would require a higher insulation ratio to compensate for the lack of resistance in the supporting structure.

Knowing the static deflection of a mounting under a given load, by means of the chart shown in Fig. 37 it is possible to determine the natural frequency of the mounting under that load. Simply locate the horizontal line having the value of the known static deflection, follow this line until it meets the diagonal, then follow the nearest intersecting vertical line downward to the value shown. In the reverse manner, to determine the static deflection of a mounting which will produce a known natural frequency, find the vertical line with the value corresponding to the natural frequency, follow this vertically to where it meets the diagonal and then follow the nearest horizontal line to the static deflection curve. Having determined the forced frequency vibration and the minimum percenta of vibration absorption permissible, t next step is to select proper mountin It is obvious that the mountings mu have static deflection which will assu a natural frequency sufficiently low result in an adequate insulation ratio.

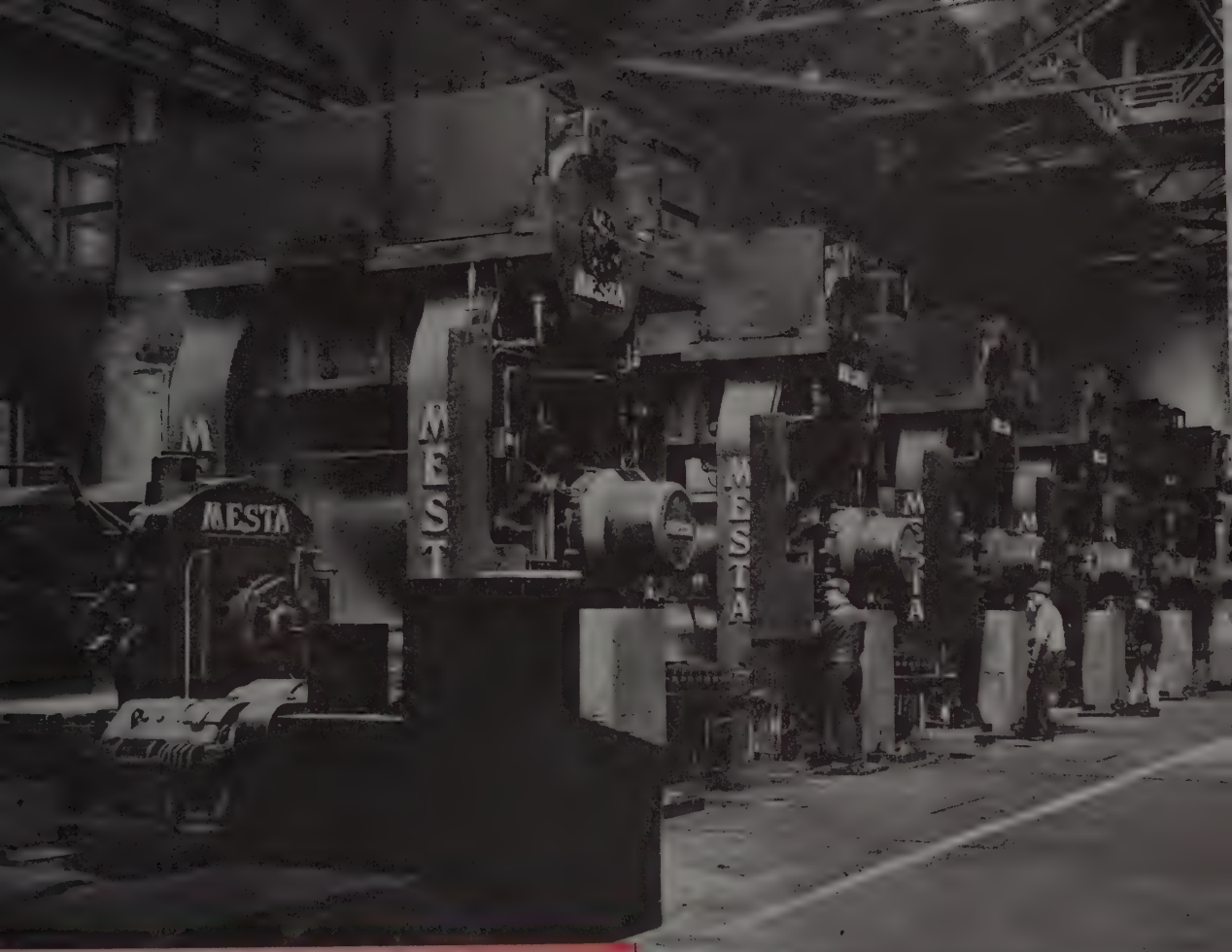
The data given in connection wi standard types of U. S. Royal rubb mountings illustrated and described the company's bulletin includes tab giving: (1) The load recommended as maximum for each mounting. (2) T minimum forced frequency of vibrati of the mechanism which will be absorb effectively by the mounting when su porting each of the various minimu loads indicated. (3) (For bumpers a wear pads) Maximum constant fo which can safely be applied. (4) (F bumpers and wear pads) Maximum to force which can safely be withstood o casionally. Also included are curves f each type mounting, plotted to show t amount of static deflection resulting fr various loads. These data are obtain from actual tests. Deflections of mou ings in production quantities may va slightly from those shown by the curv

The usual procedure in selecting sta

(*Please turn to Page* 156)

TABLE XIV—Specifications of Mountings
(U. S. Rubber Co.)

Forced Freq. c.p.m.	Load Range lb. per mtg. Min.	Max.	Rubber Shear	Comp.	Mounting No.*
500	2460	2700	X		1100A
	2725	3000	X		1103A
700	122	140	X		B330
	1250	2700	X		1100A
	1430	3000	X		1103A
850	20	27	X		B310
	24	33	X		C311
	98	140	X		B330
	170	300	X		520A
	180	230	X		500A
	185	185	XA		820B
	210	280	X		B340
	220	220	X		201A
	370	370	X		201C
	370	370	X		510C
	850	2700	X		1100A
	900	900	X		200B
	1000	3000	X		1103A
1000	12.1	14.5	X		A300
	15	27	X		B310
	18	33	X		C311
	70	140	X		B330
	80	90	X		101C1
	120	300	X		520A
	138	185	XA		820B
	140	230	X		500A
	150	280	X		B340
	160	220	X		201A
	170	180	X		101C3
	270	370	X		510C
	278	370	X		201C
	290	300	X		101C5
	400	420	X		101C7
	600	2700	X		1100A
	660	900	X		200B
	700	3000	X		1103A
	5600	6200		X	700B
1250	2.2	2.8	X		A321
	2.5	3.3	X		A320
	4.2	4.5	X		A301
	7.2	14.5	X		A300
	10	27	X		B310
	12	33	X		C311
	32	44		X	1020A
	45	140	X		B330
	51	56		X	1020C
	55	90	X		101C1
	63	76		X	B310
	70	300	X		520A
	90	185	XA		820B
	90	230	X		500A
	105	220	X		201A
1250 (Cont.)	110	180	X		101C3
	110	280	X		B340
	160	370	X		510C
	190	370	X		201C
	195	300	X		101C5
	260	420	X		101C7
	315	432	X		110C9
	400	2700	X		1100A
	450	3000	X		1103A
	460	900	X		200B
	700	700		X	B340
	725	1050		X	520A
	3200	6200		X	700B
1500	1.5	2.8	X		A321
	1.7	3.3	X		A320
	3	4.5	X		A301
	6	14.5	X		A300
	8	27	X		B310
	8	33	X		C311
	16.5	16.5	X		120A1
	21	44		X	1020A
	28	28	X		120A2
	35	56		X	1020C
	35	140	X		B330
	40	90	X		101C1
	42	76		X	B310
	44	44		X	A300
	45	300	X		520A
	48	48		X	C311
	49.5	49.5	X		120A3
	67	185	XA		820B
	67	230	X		500A
	70	220	X		201A
	80	180	X		101C3
	80	280	X		B340
	95	95	X		120A6
	120	370	X		510C
	135	300	X		101C5
	135	370	X		201C
	183	420	X		101C7
	220	432	X		110C9
	260	260		X	B330
	260	2700	X		1100A
	320	900	X		200B
	320	3000	X		1103A
	375	375	XA		810C
	472	472	XA		800C
	500	700		X	B340
	500	1050		X	520A
	540	540		X	500A
	2200	6200		X	700B
1750	1.1	2.8	X		A321
	1.3	3.3	X		A320
	2.2	4.5	X		A301
	4.5	14.5	X		A300
	6.0	27	X		B310
	6.0	33	X		C311
	13.5	16.5	X		120A1
	15	44		X	1020A
	20	28	X		120A2
	24	56		X	1020C
	28	90	X		101C1
	30	140	X		B330
	31	76		X	B310
	34	48		X	C311
	35	300	X		520A
	36	49.5	X		120A3
	37	44		X	A300
	50	220	X		201A
	53	230	X		500A
	54	185	XA		820B
	60	180	X		101C3
	60	280	X		B340
	70	95	X		120A6
	90	370	X		510C
	100	370	X		201C
	105	300	X		101C5
	130	420	X		101C7
	160	432	X		110C9
	190	260		X	B330
	220	2700	X		1100A
	240	900	X		200B
	250	3000	X		1103A
	290	375	XA		810C
	312	375	XB		810C
	355	472	XA		800C
	360	1050		X	520A
	375	700		X	B340
	380	540		X	500A
	400	472	XB		800C
	850	850		X	510C
	1600	6200		X	700B
2000	0.8	2.8	X		A321
	1	3.3	X		A320
	1.5	4.5	X		A301
	3.3	14.5	X		A300
	4.0	27	X		B310
	4.5	4.5		X	A320
	4.5	4.5		X	A321
	5	33	X		C311
	7.5	9.5		X	A301
	10	16.5	X		120A1
2000 (Cont.)	10	44		X	A321
	15	28	X		A320
	17	300	X		A301
	19	56		X	A300
	19	140	X		B310
	23	44		X	A321
	23	76		X	B310
	24	48		X	C311
	24	90	X		1020A
	26	49.5	X		120A2
	37	220	X		1020C
	40	230	X		101C1
	43	180	X		B330
	43	185	XA		820B
	50	280	X		500A
	55	95	X		120A3
	67	370	X		A300
	70	70		X	201A
	75	370	X		500A
	78	300	X		820B
	100	420	X		101C3
	117	432	X		B340
	140	260		X	120A6
	160	2700	X		510C
	170	900	X		1100A
	190	3000	X		200B
	220	375	XA		1103A
	233	375	XB		810C
	240	1050		X	800C
	260	472	XA		520A
	270	510		X	B340
	275	700		X	500A
	305	472	XB		800C
	320	320		XB	510C
	600	850		X	700B
	1100	6200		X	1020A
2500	0.5	2.8	X		A321
	0.7	3.3	X		A320
	1	4.5	X		A301
	2	14.5	X		A300
	2.5	4.5		X	B310
	2.7	4.5		X	C311
	3	27	X		1020A
	3	33	X		120A2
	4.5	9.5		X	1020C
	6	16.5	X		101C1
	6	44		X	B330
	10	28	X		520A



MESTA

Mesta 56 inch Four High
Continuous Hot Strip Mill
Installed at
Steel Company of Canada

Continuous
HOT STRIP MILLS

TA MACHINE COMPANY · · · PITTSBURGH, PA.

Receiving BAR STOCK

Unloading and checking of bars shipped by truck may be simplifie by analyzing handling problems and establishing effective receivin procedure

By BENJAMIN MELNITSKY

BAR stock is difficult to receive especially when shipped by truck. In addition to the problems encountered in physically handling bars, it is necessary that paper work should represent the beginning of effective stock control.

Since large amounts of bar stock are shipped by truck, the great difficulty lies in the decided lack of uniformity in the manner of shipping. Some bars are shipped carefully with full thought given to the problems that will be encountered when the material is unloaded; in other cases no effort is made to ease unloading.

There is little consistency in the types of trucks used or in the way they are prepared for shipment. In actual practice each truck-load of bar stock presents a unique and individual material handling problem. Each truck must be handled differently; each has distinct problems connected with its unloading.

When bar stock is shipped in the proper manner the unloading problem is easy. Bundles are lifted readily from above by chain and hoist, or fork trucks can pick off loads from both sides of the motor truck. With these two materi handling means, there is no need f manpower to unload bar stock. Manpow should be used solely to direct and opera materials handling equipment. Powe driven equipment can handle bar stoc faster, cheaper, safer, and more sati factorily than can manpower alone.

However, ideal conditions of shipmer do not always exist. More often than n bar stock is badly shipped and few of th basic considerations that should gover such shipments are observed.

When such a shipment comes in it first necessary to do the things that hav not been done by the shipper:

(1) If bars are badly bundled, the should be redone. Bundles still accessibl to the hoist chain should be raised an while in air, the bars should be wrappe with baling wire several times along the length. This will hold them together an eliminate the danger of coming loos Subsequent handling is also facilitate

(2) If bars are not bundled, they ma be enclosed by the chain, hoisted an

(*Please turn to Page* 172)

Receiving Check List Date 7/10/40
Vendor J.P. Cross Steel Co. P.O. # A-75642
Via Jones Express Pro. No. 8652 Collect / Prepaid — LI — M
Number of bars 78 Lengths 20 bars 12' 07"
40 bars 10' 1/2"
9 bars 10' 1"
9 bars 9' 7 1/2"
Metal 1020 Cold Drawn Annealed
Size 2" DIAM. Cross 1890 / Rare 1050
Net Weight 8800 Painted Green
Rec'd by B. Smith Checked J.Z.

Packing Slip # A 7001 Freight Bill # 3642
Other Paper Work None

Notes on this item Packing slip shows 9800# — weight re-checked
Bars badly loaded on vendor's truck — 2 hrs. unloading time. Vendor failed to bundle load.

No. 57619

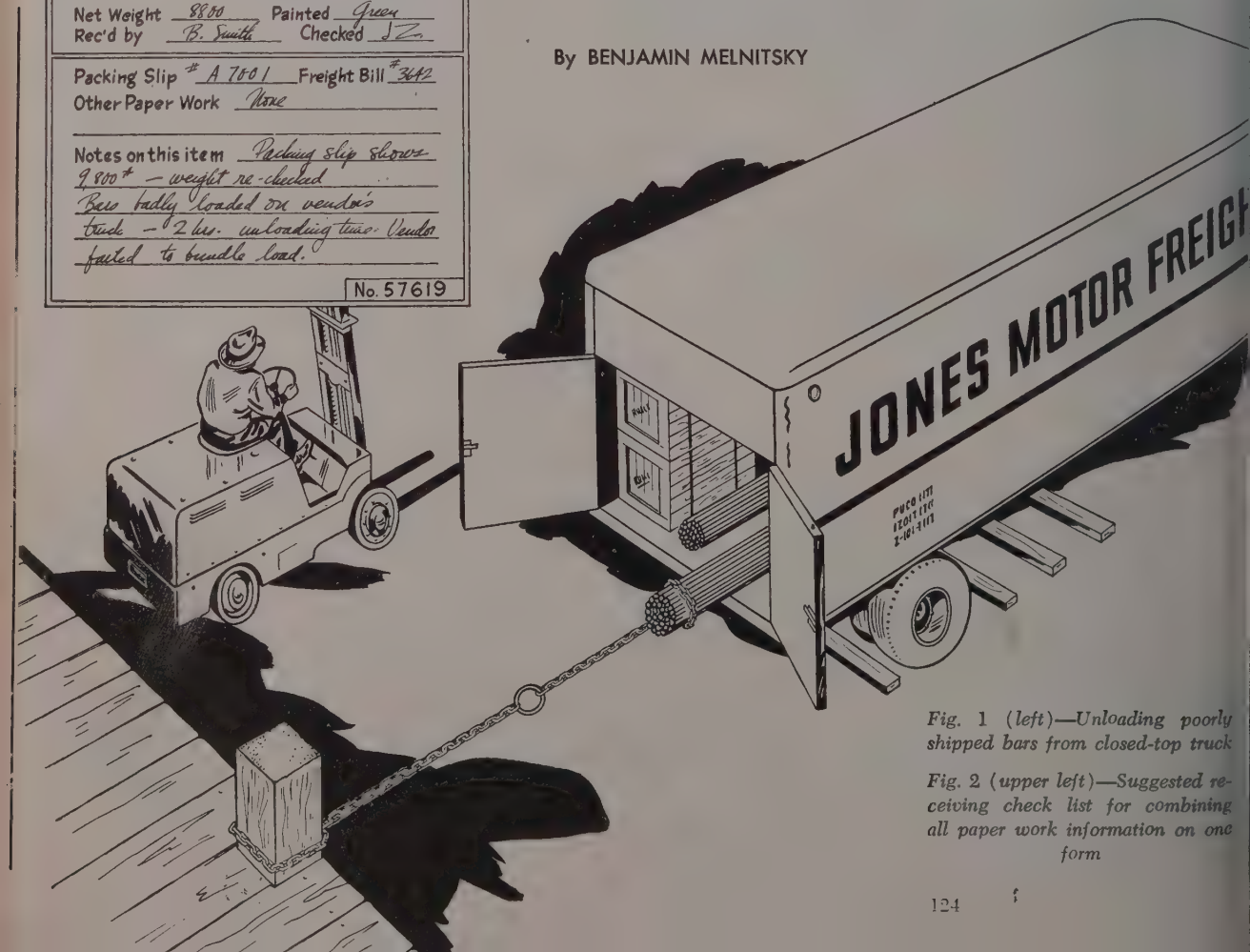
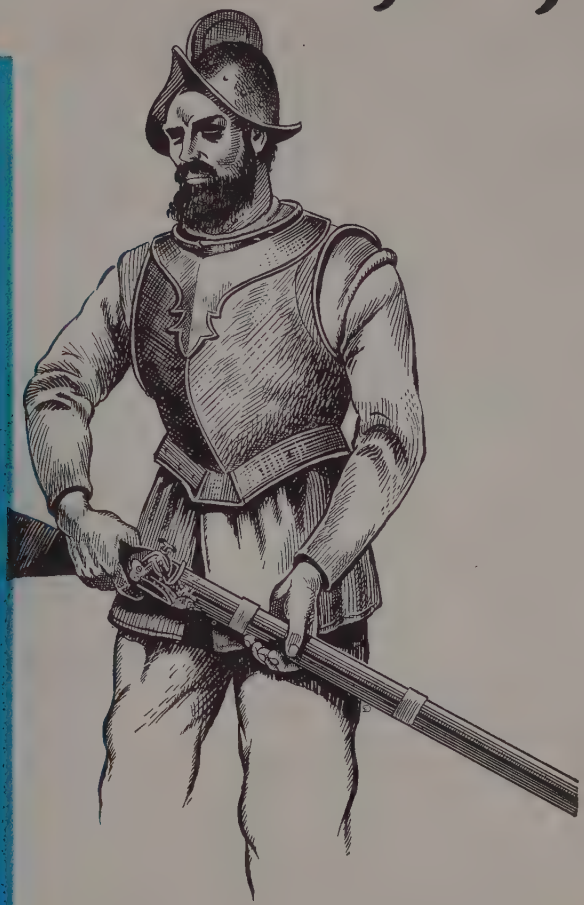


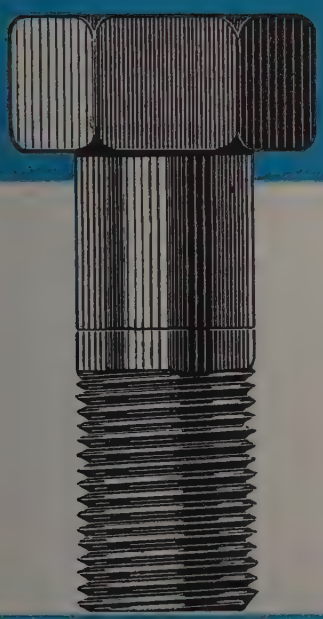
Fig. 1 (*left*)—*Unloading poorly shipped bars from closed-top truck*

Fig. 2 (*upper left*)—*Suggested receiving check list for combining all paper work information on one form*

Some pioneers corner all the glory

Miles Standish and Captain John Smith were among the great pioneers who developed the New World. Their fame is secure. Another great pioneer, however, who lived at the same time, is still unknown. He was the obscure French mechanic who, in 1630, took a flat piece of steel, filed a series of raised teeth on it, and set it up above his fast spinning lathe. Setting a piece of iron rod in his lathe he spun it against his clumsy thread cutter. By moving the cutter back and forth along his work, he slowly cut a set of threads. This was the original application of machinery to bolts, and this unknown pioneer was the father of the great industry of which CHANDLER is proud to be a member.





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Engineering News at a Glance

COMBINES BEAUTY, STRENGTH: Approximately the same structural strength as any other part of the cabinet is provided by a texturized all-metal grille incorporated in the postwar Bendix radio. The Rigidized and perforated metal grille, developed by Rigid-Tex Corp., Buffalo, is oxidized and highlighted to match or contrast with any cabinet. According to the company, grille is actually more resistant to deflection and impact than a similar gage solid sheet of the same metal. Tests of sound transmission through the metal indicate that 25 per cent open area gives the same result as 75 per cent open area of materials commonly used for radio grilles.

QUALITY CONTROL: Quality control involves observations of the manufacturing processes and correction of any operation before "defectives" are made as well as scientific determination of the number of samples to select for test, according to a report now being made available to manufacturers by the Office of Technical Services, Washington. In many cases, the report states, complete inspection of scientifically determined representative samples may be more accurate than so-called "100 per cent inspection" which may be faulty because of fatigue or inattention of inspectors. Information on various operations, prepared in form of charts, is a most important aid in saving manufacturing costs. Measurements made at regular intervals show any trend away from specified dimensions, and machines can be adjusted before they exceed tolerance limits and produce defective articles.

TOTE BOXES FROM BARRELS: Merrill Bros. in Maspeth, N. Y., recently worked out a setup that overcomes the scarcity of tote boxes. In the system, the company combines the utility of two of its latest tools to convert steel barrels or kegs into convenient form for storing and conveying small parts or loose material around the plant. Tools used in the system are a steel drum cutter and a double-action clamp. The latter is used for grabbing and lifting the barrels or other converted containers when transporting them wherever needed.

MECHANICAL MATH GENIUS: An electronic computer that works out complex mathematical problems 100,000 times as fast as the human brain is now in process of development. Revealed at the winter meeting of the American Institute of Electrical Engineers recently, the development completes in 5 min, calculations that would take a human operator one year. According to Jay W. Forrester, associate director of the Servomechanisms lab at Massachusetts Institute of Technology, where the computer is being developed under the sponsorship of the Office of Naval Research, such computers will in time be used to control processes in chemical plants and "automatic factories."

HARNESSES ATOMIC POWER: Atomic power was harnessed on an industrial scale for the first time in history at the Hanford Engineer Works of General Electric, C. P. Cabell, plant chemical engineer, revealed recently. Problem of atomic heat control actually was solved before the first atom bombs were assembled, he disclosed. There is no danger that atomic energy would make obsolete existing water power or fuel-generated power facilities, he pointed out. It will be some years before atomic power will be available for application to industry. Three industrial atomic energy plants are now functioning at the Hanford plant, he said.

COMPETITOR FOR CRANKSHAFTS: Device that may open the way toward building some types of engines without crankshafts was invented recently by James A. Hardman of Logan, Utah. Called a motion transformer, it converts back-and-forth motion into rotary motion and vice versa. Government technicians describe it as the first new development in this particular field of mechanics in decades. Heart of the device is a yoke on a steel rod. Its action is similar to that of a teeter totter.

"PROSPECTING" ELECTRONS: By shooting electrons at a target, an electronic gun compass developed by Minneapolis-Honeywell Regulator Co., Minneapolis, not only keeps planes and ships on course, but also may be capable of locating oil, ores and other materials beneath the earth's surface. Unveiled at the American Institute of Electrical Engineers' meeting in New York recently, the development contains no moving parts and looks more like a black stick the size of a flashlight. According to Dr. Waldo Kliever, director of research for the company, the instrument consists primarily of a vacuum tube which houses an "electron gun" that fires a constant and focused stream of electrons at four tiny target plates. The beam is equally divided between the plates when the gun is pointed in the direction of the earth's magnetic field but in any other position, the earth's pull bends some of the beams so that they strike the target unevenly. Through a sensitive electronic amplifier, the instrument measures the different currents on each of the plates and translates this difference into energy powerful enough to move indicator needles and control a coupled autopilot. Because the cathode-ray tube measures intensity of magnetic pull as well as direction, it is possible to use the instrument as a prospecting device.

SEEKS CAUSE OF "RAT TAILING": Investigation to determine exact sand properties that cause rat tail casting defects to appear on flat surfaces of castings is now well underway it was learned from the American Foundry Association committee on physical properties of iron foundry molding materials at elevated temperatures. During the early part of April, in the University of Michigan's foundry at Ann Arbor, a large number of test castings will be poured under precise controlled conditions, changing metal, sand or molding condition one at a time to discover precisely the sand property causing the defect.

GAS TURBINE LOCOMOTIVES: Each gas turbine used in the two test locomotives to be built this year burns less than 1 lb of coal per turbine horsepower, according to the Bituminous Coal Institute, Washington. It consumes no water, and will produce a thousand rail horsepower hours at full load at a cost below $2 for fuel and lubricating oil. Another economy of the smokeless railroad gas turbine, the institute points out, is that its exhaust heat can be applied to the train's heating system, adding several thousand dollars per locomotive year to the turbo-motive's credit. Calculated on the basis of 250,000 miles per year for a main-line locomotive, the coal-fired gas turbine indicates an operating saving of about $50,000 per locomotive per year in fuel and maintenance costs.

FAST STRIPPER: Chore of stripping synthetic enamels and other coatings on large metal parts that cannot be immersed in a stripping solution is an easy and fast one when a slightly viscous liquid produced by Enthone Inc., New Haven, Conn., is used. Referred to as S-45, the product contains a non-waxy evaporating retardent that keeps the stripper on the work until stripping action is completed. Action is a wrinkling proce

Michigan

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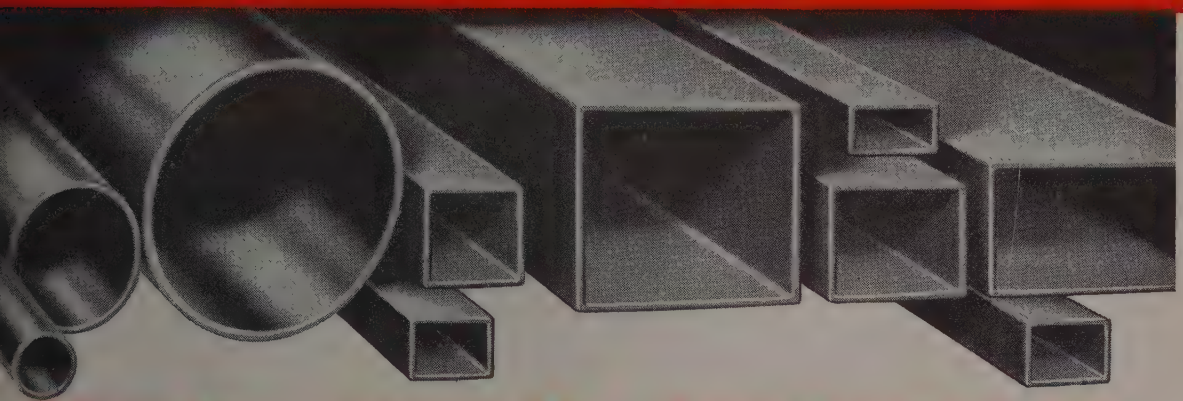

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l Products Co., Pittsburgh, Pa.—Strong, Carlisle & Hammond Co., Cleveland, Ohio—C. A. Russell, Inc., Houston, Texas—Drummond, McCall
, Ltd., Toronto, Canada.

that enables the finish to be brushed, wiped or scraped off. The liquid is applied by either brushing, spraying or dipping. It is not satisfactory, however, for linseed oil paints.

ENTERS INDUSTRIAL FIELD: In Cincinnati, distributors and sales representatives of Lodge & Shipley Co.'s special products Risselt Division recently were introduced to a new development—an industrial-use air eliminator valve for special application in steam-processing operations involving pressures up to 110 lb. It is said to increase efficiency in canning, rubber, food processing and chemical industries.

INSTANT FIRE STOPPER: Method of safeguarding butadiene at the Goodyear-operated Rubber Reserve plant, Akron, is believed to be the last word in minimizing fire hazards associated with this gas. Not only designed for immediate reaction against any threat or actual outbreak of fire, the equipment also detects and warns of escaping butadiene. One feature is all butadiene at the plant is stored and circulated under water. Received in liquid form, it is distributed in pipe lines through a series of canals and large storage reservoirs extending over nearly 3 acres. Completely automatic waterfog system, highly sensitive to heat, makes up the fire equipment. Waterfog units, concentrated around each reservoir of gas, consist of many orifices. These are electrically synchronized so they operate either simultaneously or in series in connection with heat actuator devices. Operating with the waterfog units is a gas detecting device that constantly samples air. Any concentration of gas above 60 per cent of its lower explosive limit will sound an alarm, while indicating by flasher lights location of the leak. If concentration rises higher, vapor is ignited by an automatic spark. This affects the heat actuators which release the waterfog units, the latter discharging columns of water—about 5000 gal per min—that completely envelop the fire.

CASING FOR 16,000-FT "HOLE": National Supply Co., Pittsburgh, discloses one of the longest strings of casing ever set successfully was run recently into Superior Oil Co.'s deep test well near Fort Cobb, Okla. Record length of 7-in. casing was sunk to a depth of 16,361 ft in about 27¼-hours during a severe snowstorm—in the coldest weather experienced in the state since 1930. During the run, each length of the Spang-Chalfant casing was checked with a 0.0015-in. feeler gage for "shoulder make-up." Joints were shouldered uniformly with five or six raps on the cathead, plus three to five jerks with the tongs. Temperature at the bottom of "hole" was 350° F.

LIGHT CONDITIONING WORKERS: Because of the high brightness of incandescent metal at the start of a weld during operations, the pupils of an operator's eyes contract so much he is forced to remove his goggles to examine the weld, replacing them before making another contact. This consumes production time, not to mention the effect it has on the worker. Outdoors, however, it was found a welder could examine a weld without removing his dark goggles because the contrast between overall brightness of the work area and the brightness at the moment of the weld is reduced appreciably. But all welding operations cannot be moved outdoors. According to Fostoria Pressed Steel Corp. at Fostoria, O., general lighting in a welding area should be built up as much as possible to reduce brightness contrast between work and surroundings. When a worker looks up from the job to a brightly lighted wall, for example, his eyes do not have to be "light conditioned" when he looks back at his work. Such a setup also minimizes flash effect and benefits other workers in the area.

CRAFTSMANSHIP THE SECRET: Reduction of dross in metal galvanizing and methods of removing scale from rolled steel wire are discussed in two German reports recently acquired by the Office of Technical Services, Washington. One of the studies stresses the importance of craftsmanship on the part of galvanizing crews as contrasted with operating techniques or methods. According to the report, German craftsmen, by careful pickling and fluxing, are able not only to avoid most of the important sources of difficulty, but to neutralize ill effects of many construction errors by adapting the mode of charging and galvanizing the articles in question, and by tending the heating plant in a manner that makes serious troubles practically impossible.

HERE TO STAY: Soundness of the geared steam turbine idea for locomotives is being proved at the rate of several thousand miles weekly, according to engineers of Westinghouse, Baldwin and Pennsylvania Railroad who feel the steam-turbine drive is here to stay. Successfully passing tests after being given "the works" during the latter part of last year, the 6500-hp locomotive is now in its third proving stage, accumulating mileage in day-to-day railroad operation. Next appearance of the steam turbine on rails will be the three turbine-electric locomotives for the C & O Railroad. These are expected to see service this year. Each is to have a single 6000-hp steam turbine geared to two direct-current generators which will supply power to eight axle-hung motors, common to diesel-electrics. At present studies are being made of a 9000-hp geared turbine unit to employ two 4500-hp steam turbines set longitudinal with the locomotive frame, each driving four axles through longitudinal shaft and gearing instead of side rods.

FUSION PIERCING: Recently tested on the Mesabi iron range, a new method of making vertical blast holes in taconite is said to have pierced 6-in. holes up to 30 ft deep at an average rate of 10 ft per hour. The new process, called "fusion piercing" was developed by The Linde Air Products Co., New York. A flame produced by burning oxygen and a flux-bearing fuel in a special blowpipe is directed against the surface of the ore. High flame temperature—about 4000°F—causes some kinds of rock to spall or flake off while flux in the fuel causes other rock to melt. Pressure of the burning gases forces the molten material past a water spray where it is quenched and broken up. In the accompanying photograph expelled granulated slag can be seen around the hole.

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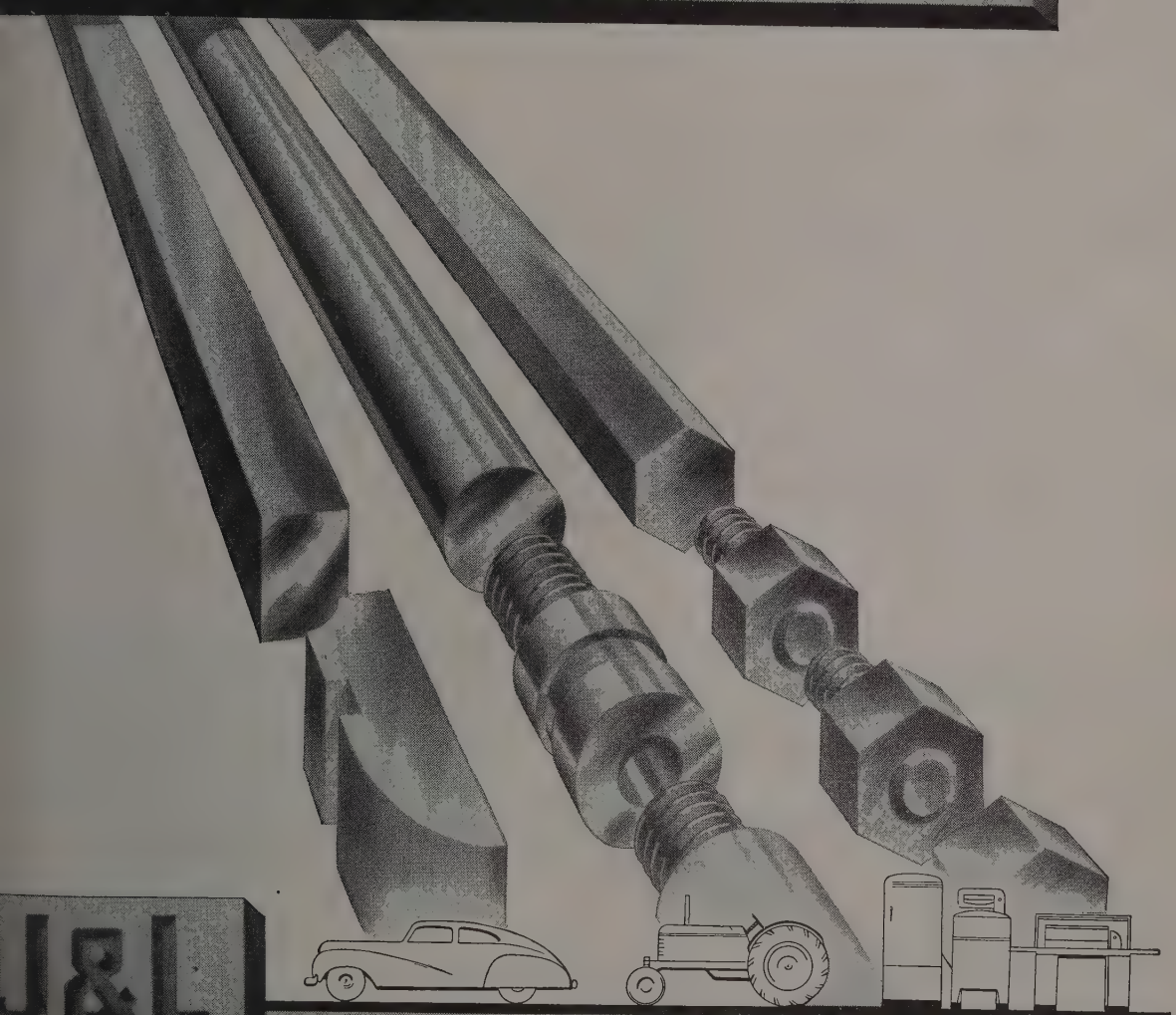

J&L STEEL

In addition to improved machinability and longer tool life obtained through use of J&L Cold Finished steel, many manufacturers specify this precision product for its improved surface finish. They also obtain in J&L cold drawn and cold rolled bars and special shapes the higher physical qualities needed for parts of modern high-speed machines. J&L engineers and metallurgists will be glad to assist you with your production problems. Write or phone your nearest J&L office.

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PITTSBURGH, PA.

Thermal Requirements for Blast Furnace Operation

Operating practice at blast furnaces burdened on raw materials peculiar to Eastern, Southern and Northern districts is compared in this the first of a series of articles

By CHARLES E. AGNEW
Consultant
Blast Furnace and Sintering Plant Operations
Cleveland

HEAT is the agent which effects all chemical reactions of the blast furnace operation. Johnson[a] makes a significant comment to the effect that there is little connection between amount of heat required to produce a ton of pig iron and the fuel rates per ton of iron of furnaces operating under different conditions. The cause of the seeming discrepancy lies in the fact that while the heat required to reduce the iron from various states of existence in the raw materials is relatively constant and comparable, the amount required to effect the associated chemical reactions necessary to remove the gangue varies widely with the chemical composition and amount of gangue to be removed.

Amount of heat required by both the iron and the gangue chemical reactions will be determined by thermochemical laws, but economy in the application of heat to effect them will be determined by the mechanical laws governing the action of gas-solid contact, and transmission of heat from gas to stock in the furnace operation. The heat required for any given amount and chemical composition of gangue will be relatively constant; the same as the heat requirements for iron of a given chemical specification but the possible fuel economy of the given operation will be determined by the amount of heat *recovered* and not by the amount *generated*. This thought will be further developed as this article progresses.

Blast furnace operation is a chemical process conducted for commercial purposes and therefore the direction of the operation must be considered from both viewpoints. Chemical and thermal requirements will determine what *can* be accomplished with the raw materials and operating facilities available. Commercial requirements will determine what *must* be accomplished if the operation is to be economically successful. The cost of fuel is always a substantial part of the total raw material cost and therefore it is always commercially desirable to use as little of it as possible, but another commercial factor, that of raw material assembly cost, may permit a fuel rate in one locality which would

[a] All references are presented at end of this installment.

Casting time at the blast furnace with a mixer-type ladle receiving molten metal

Negative Photostat in file

be economically prohibitive in another.

The blast furnace industry of the United States is largely confined to the Southern, Middle West, and Eastern districts and the raw materials used in each have determined their respective permissible operating economies. It is a historical fact that the Eastern district, using native ores and fuel, was once the largest pig iron producing center of the three districts cited but lost that position of supremacy to the Middle West district with the development of the naturally rich Lake ore deposits and in the course of time the Eastern district receded to a position of secondary importance in pig iron production. The great majority of the present generation of blast furnace operators are therefore familiar with only the furnace operations using Southern and Lake ores. In the vernacular of the industry these operations are referred to as "Southern" and "Northern" practice.

In the struggle for economic survival on the part of the eastern furnaces a few which survived were forced to develop an operating practice which should not be called new but rather a revival of an old practice in a modern setting, which in this article will be referred to as "Eastern" practice.

Since the principles of blast furnace operation do not change, but only the conditions under which principles are applied, a comparison of the three practices cited is not a comparison of districts alone but rather a comparison of operating conditions caused by the raw materials peculiar to the districts. The thought to-emphasize is that furnace practice conditions are not determined by geographical location but by the character of the raw materials used in the location and that the approaching exhaustion of the naturally rich ores of the Lake region which have determined the Middle West, or Northern furnace practice, will inevitably force that district into a Southern practice, if leaner ores are used, or into the Eastern practice, if the lean ores are fully beneficiated.

Criterion Is Assembly Costs

Since the commercial success of the Southern practice has been economically practical only because of low cost raw material assembly (in the Birmingham district) the use of that practice in the Middle West can never be a solution of that district's economic problem because the raw material assembly costs there now are higher than the Southern district and will increase per unit of product as the iron content of the raw materials decrease. An increase in the raw material assembly cost plus an increase in the fuel rate to smelt the leaner ores would be commercially prohibitive for many of the blast furnaces in the Middle West.

Lean ores of the South, naturally rich ores of the Lake region, and sintered concentrates of the East, offer an excellent opportunity to compare the thermal requirements of the three classes of materials. The difference in requirements can best be illustrated by a comparison of heat balances for each of the three conditions.

Calculation of a blast furnace heat balance may be likened to the calculation of a furnace burden in that it is entirely theoretical and the results obtained are inevitably determined by the base figures with which the calculation is started, but it has the same value as a guide and indicator of the thermal requirements for the operation as the burden calculation has for the chemical composition requirements for the operation.

In the calculation of a heat balance it is necessary to use various factors which are themselves determined by calculation based upon the principles of thermodynamics and in the several heat balances available for study the respective authors occasionally arrive at slightly different results. Considering the many opportunities for differences to occur these slight differences are not surprising and are unimportant in the study of blast furnace thermal requirement principles but obviously where different operations are to be compared it is desirable to have the data prepared and arranged in exactly the same manner. Fortunately for the purpose of this article Mathesius[2] and Kinney[3] have prepared heat balances in which the same factors generally have been used and Mathesius has presented a procedure easily followed.

Mathesius based his heat balance calculation upon the amount of carbon consumed by combustion. His calculation has been reproduced by Johnson[4]

TABLE I—CALCULATION OF BURDEN

	%	Lb	Pounds SiO_2	Al_2O_3	CaO	MgO	Iron	P	Mn	S	H_2O
Sinter	40.57	1400	91.0	35.4	1.4	1.1	860.0	3.22	1.4	1.40	14.0
Magnetic Conc.	34.78	1200	66.0	27.0	1.2	1.0	768.0	0.48	1.2	....	48.0
O.H. slag	8.70	300	63.0	9.0	108.0	24.0	48.0	3.00	21.0	0.36	....
Ferromn. slag	7.24	250	77.5	23.0	117.0	9.5	5.0	....	20.0	3.75	....
Roll scale	8.70	300	3.0	....	.....	...	201.0	0.09	1.2	....	....
Total	99.99	3450	300.5	94.4	227.6	35.6	1882.0	6.80	44.8	5.51	62.0
Scrap		350	14.0	....	...	...	297.5	0.17	2.1	.....	...
Coke		1350	53.3	37.6	7.4	3.6	10.8	0.10	...	11.47	40.5
Limestone		300	2.7	1.0	159.0	2.2	....	....	...	.....	3.7
Total		5450	370.5	133.0	394.0	41.4	2190.3	7.07	46.9	16.98	106.2
To flue dust			7.5	2.7	7.9	0.8	42.8	0.14	0.9	0.34	
			363.0	130.3	386.1	40.6	2147.5	6.93	46.0	16.64	
To scrap			0.7	....	.....	....	62.4	0.20	1.0	.....	
			362.3	130.3	386.1	40.6	2085.1	6.73	45.0	16.64	
To pig iron			47.7	....	.....	...	2085.1	6.73	33.7	0.67	
To slag			314.6	130.3	386.1	40.6			11.3	15.97	

Slag

Compound	%
SiO_2	35.03
Al_2O_3	14.51
CaO	42.99
MgO	4.52
S	1.78
Misc.	1.17
	100.00

Iron

Element	%
P	0.300
Mn	1.50
Si	1.00
S	0.030
C	4.00
Fe	93.17
	100.00

Ratio:

Ore to coke	2.55/1.00
Ore, scrap to coke	2.78/1.00
Ore, scrap and stone to coke	3.00/1.00
Cinder per ton metal, lb	898
Coke per ton metal, lb	1350

TABLE II—ANALYSIS OF RAW MATERIALS

	Per Cent							
	Sinter	Magnetic conc.	O H. slag	Ferro-Mn slag	Roll scale	Lime-stone	Coke	Scra
H_2O	1.00	4.00	——	——	——	1.25	3.00	——
SiO_2	6.50	5.50	21.00	31.00	1.00	0.90	3.95	4.0
Al_2O_3	2.53	2.25	3.00	9.19	——	0.30	2.79	——
CaO	0.10	0.10	36.00	46.80	——	53.00	0.55	——
MgO	0.08	0.08	8.00	3.80	——	0.75	0.27	——
Fe	61.43	64.00	16.00	2.00	67.00	0.25	0.80	85.0
P	0.230	0.04	1.00	——	0.03	0.08	0.008	0.0
Mn	0.10	0.10	7.00	8.00	0.40	——	——	0.6
S	0.10	——	0.12	1.50	——	——	0.85	0.0
CO_2	——	——	——	——	——	44.85	——	——
Fixed carbon	——	——	——	——	——	——	90.00	——
Volatile matter	——	——	——	——	——	——	0.90	——

who analyzes it and checks the results by determining the amount of oxygen available for carbon combustion. The Mathesius balance was calculated in 1915 from data compiled from an actual Northern practice operation when the Lake ores were at their best and is therefore representative of such practice, or of naturally rich soft ore practice anywhere.

The Kinney balance was calculated from data compiled from an actual Southern practice operation and therefore is representative of the Southern lean ore operations, or of similar lean ore operations anywhere. The Kinney balance has been reproduced by Sweetser[4] and compared to other balances.

Unfortunately there is not any published heat balance of an Eastern practice operation available for comparison with the Southern and Northern balances but to supply a means the heat balance presented with this article has been prepared from theoretical data (based upon actual practice) and by following the Mathesius procedure. While the Mathesius and Kinney balances were calculated from average actual practice data compiled over a period of time the net results of their calculations are shown as heat requirements for 1 gross ton (2240 lbs) of pig iron and therefore the heat balance prepared for the theoretical data of the Eastern practice operation is based upon 1 gross ton of pig iron. For brevity of identifying the three balances in the comparison to follow they will be referred to simply as South, North, and East, and the reader will understand that the South represents the Kinney lean ore calculation, North the Mathesius naturally rich ore calculation, and East the beneficiated ore calculation presented with this article.

Preparation of the operating data upon which to base the East heat balance calculation presents the opportunity to illustrate a number of items of particular interest and importance regarding the Eastern practice which the author has stressed in other articles dealing with the use of beneficiated iron bearing materials in the furnace burden, which have appeared in STEEL. Analyses of the materials used in calculating the burden are shown in Table II and are representative of the materials for which they are used.

Particular attention is called to the moisture content of the materials. The sinter is shown as 1.00 per cent. All sinter will be saturated with moisture at approximately 2.00 per cent and in actual operation it is frequently entirely dry when charged, therefore the mean of 1.00 per cent is used as the most representative.

Magnetic concentrates are hard granular particles and incapable of absorbing moisture, all moisture being on the surface only. In this respect the material is comparable to sinter but because the average particle size of the concentrate is smaller than sinter the moisture saturation point is higher and is shown as 4 per cent.

Origin of Slag

Ferromanganese slag is the slag from a blast furnace producing ferromanganese and is similar in its physical structure to any blast furnace bank slag. Open-hearth slag, roll scale, and limestone, are similar to such materials anywhere. None of these four materials contain any combined moisture and the surface moisture varies with weather and handling conditions, the 1.25 per cent moisture shown for the limestone is used as representative of an amount which may reasonably be expected as an average of the four materials. Total moisture content of the mix is low when compared to a soft ore mix.

Attention is called to the lower percentage of iron in the sinter than in the concentrate. The sinter analysis is shown as representative of a blend of materials designed to produce a sinter of a desired chemical composition. The materials used may be all magnetic concentrates, all soft ore hematites, a mixture of both, or the chemical by-products of other industries. The thought to emphasize being that whatever the characteristics of the raw materials used the sinter produced from the blend will be uniform in its physical properties and have a chemical composition which is an average of the nonvolatile constitutents of the raw materials.

Attention is called to the 0.10 per cent sulphur content of the sinter. One of the material analyses used to produc the average sinter analysis shown was magnetic concentrate containing 3.00 t 3.50 per cent sulphur which existed as sulphide and consequently acted as fuel in the sintering operation, repla ing the weight of carbon virtually poun for pound.

Concentrate could be sintered eith as a part of a blend or as 100 per ce of the sintering mix and the sulph content of the sinter would be a max mum of 0.10 to 0.12 per cent. Althoug small the percentage of sulphur in t sinter materially increased the amou of sulphur charged into the furnac compared to a natural soft ore burde However, sulphur elimination under suc conditions is not a serious problem. Wit out specific data to support it but base upon reason and experience the opinio is given that the percentage of sulph left in the sinter is in that small pe centage of the sinter mix which it n sintered (common to all sintering oper tions) and is roasted out in the top the furnace, consequently it does n increase the desulphurizing action r quired in the hearth of the furnace.

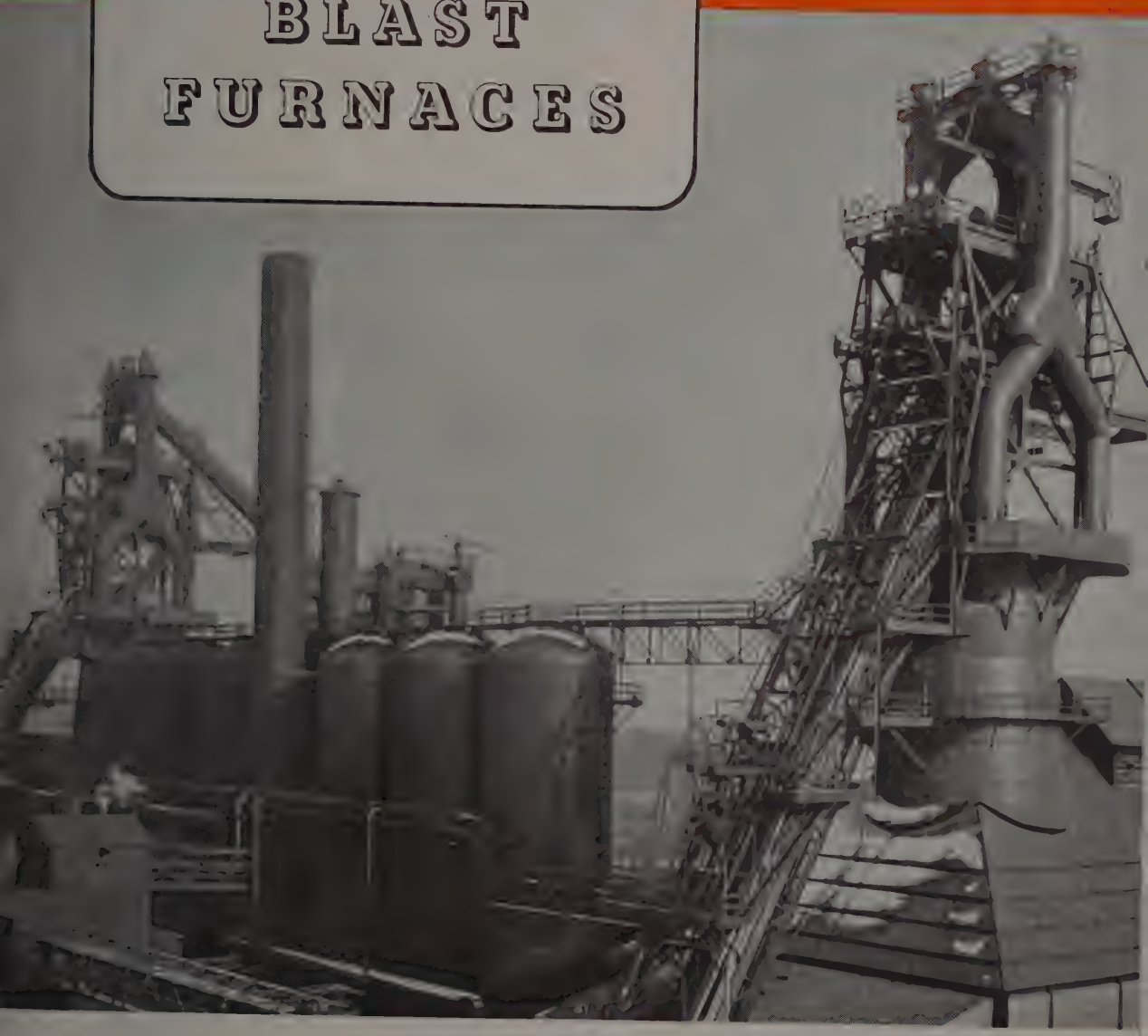
The foregoing reasoning is support by the historical fact that as far back colonial days the natural ore from t mine from which the above mention high-sulphur concentrates were produc was used in a stone blast furnace to pr duce a commercial grade of iron f castings. Since principles do not chang such iron would have to be reasonab low in sulphur to be so used. Th natural ore alone would give an iron co taining 0.800 per cent phosphorus a would therefore be very fluid. To furth support the reasoning the author, for short period, used the raw high su phur concentrate as 15 per cent of foundry iron burden without any effect or any desulphurizing difficulti It is not intended to represent the su phur content of the sinter as represent tive of "Eastern Practice" but to illu trate that with the operating conditio of a well regulated sinter burden t elimination of sulphide sulphur is n a serious problem.

Attention is called to the absence

(*Please turn to Page* 166)

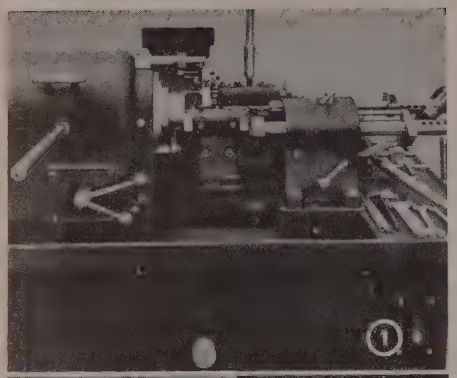
ER 2 IN A SERIES OUTLINING McKEE SERVICES TO THE IRON AND STEEL INDUSTRY IN RECENT YEARS

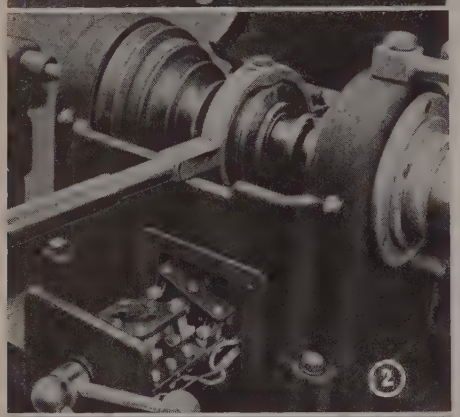
BLAST FURNACES

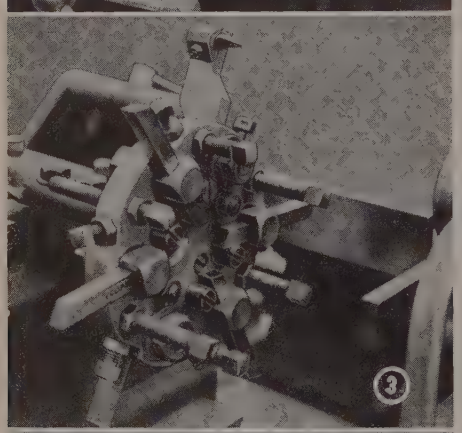


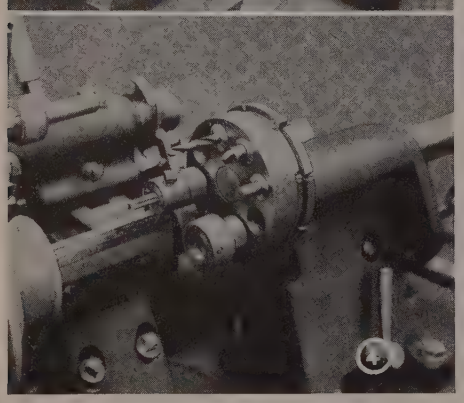
URING the ten-year period between 1936 and 1947 there has been a greater expansion in iron producing facilities than in any like od in the Iron and Steel Industry's history. he McKee Organization has maintained leadership in blast-furnace engineering construction by designing and building urnaces in the past 10 years. More than half of these projects included stoves, cast houses, stock houses and gas cleaning equipment.

The volume of engineering and construction which has been entrusted to this organization during the critical pre-war and wartime period is an indication of the confidence which has been earned by McKee in four decades of service to the Iron and Steel Industry.









Repetitive Lathe

. . . typical of newer designs in British machine tools

TYPICAL of newer designs in British machine tools is the 3/4-in., multitool repetitive lathe designed and manufactured by Britain Industries, Cambridge, England. The same people have been producing a 3/8-in. capacity machine of similar type for some years.

The new lathe makes parts in one operation which normally require two or more and although manually operated, in many cases has a production speed equal to that of an automatic. It has a special appeal to manufacturers who cannot justify the use and costly set up of a fully automatic machine, but at the same time want something more adaptable than an ordinary turret lathe.

The bed plate of the machine is a substantial casting accurately machined with all locations for the headstock, turret head, tailstock unit, etc. It is jigged for interchangeability. To accommodate the high spindle speeds the headstock is of massive construction and machined to accurate limits. Special extra precision Hoffman bearings are fitted to both the spindle and the chuck lock mechanism. They are nonadjustable and require no attention in use, apart from infrequent greasings.

The spindle is balanced and will run continuously at speeds of about 6000 rpm without vibration. It is fully capable of absorbing the violent torque reactions resulting from high speeds and rapid reversal. Collets are of the sprung type and have no end movement in locking up the work. The main turret is of a universal type mounted vertically at right angles to the work, on a compound slide capable of moving in both directions simultaneously.

All operation and indexing is carried out by the use of two levers held by the left and right hand at the same time. The rotation of the turret is automatic, foolproof and positive and an antispin device is incorporated to prevent over indexing. The cutting tools are mounted in reversible adjustable tool holders and tool height is regulated and positively maintained by a special device.

In operation the tools come to rest a hardened and ground steel track, whi gives support close to the cutting po and enables very heavy cuts to be ma with surprising ease. Length and diame control stops are incorporated in the t ret and setting is simple and rapid. addition, multiple back stops are fitt to allow "back cutting" to be read performed. Instant and adequate set-o of the complete turret unit is provided use in taper turning and the change fr parallel to taper is a matter of secon only.

The tailstock is of the duplex bore ty with both bores in line with the headsto spindle. An adequate supply of accesso is available for use with the standa tailstock shafts and briefly speaking th comprise threading tools for taps a dies up to ½-in. diameter, revolvi centers, drill collets, stationary cent etc., a 5/16-in. Coventry self openi is also accommodated.

Both tailstock shafts can be lever hand fed. The tailstock body swings fr front to back and in addition to standard tools, will carry an auxili turret fitted to the standard tailsto shaft. This turret carries 8 tools; spec accessories are available for thread internally and externally, in addition the normal tailstock accessories alre mentioned. The tailstock turret is suitable for drilling, centering, count boring etc.

The machine is driven by a spe Higgs motor of a 4 to 1 ratio 2-speed versing type, especially made to take c of the high performance of the machi The drive to the spindle is through normal large section V belt and pull with four steps. Change of speed and direction of rotation is carried out stantaneously by levers through a s cially designed 2-speed reversing c troller, built into the headstock unit. versing is direct by the mere flick o lever; it is not necessary to bring spindle to rest before reversing.

The motor is mounted with appr mately half its weight supported by adjustable spring. This ensures smo running, deals with the instant reve and enables the operator by merely tu ing a knurled knob to maintain cor belt tension. Belt renewal has recei especial attention in the design and

(*Please turn to Page* 170)

Fig. 1—*Close-up of British repetitive lathe*

Fig. 2—*Headstock spindle and controller*

Fig. 3—*Main turret is universal type mounted vertically at right angles to work, on a compound slide capable of moving both directions simultaneously*

Fig. 4—*Tailstock turret carries* 8 *tools*

Cost of machine frame reduced 50% by change to welded design

BY LOUIS FAULB, PRESIDENT
EEN-KUT MANUFACTURING COMPANY
CLEVELAND, OHIO

roduction cost of the frame of the Kleen-Kut t saw manufactured by our company has been uced more than 50% by redesigning it for fabri- on by arc welding. The former design and the st welded design are shown in Fig. 1.

he new design has reduced machining opera- s 60%, has made the machine six times as d, cut its weight from 550 to 350 pounds, and doubled the production output of the same r area.

he changeover to all-welded design was an utionary process over an 18-month period.

Ve started with the table frame shown in Fig. 3, the cost reduction encouraged us to redesign whole machine. Since our original all-welded gn, we have made 40 improvements. If we had l conventional fabricating methods, 40 modi- tions or complete changes in patterns would e been necessary. Open views of the original ded design and the latest welded design are wn in Fig. 2.

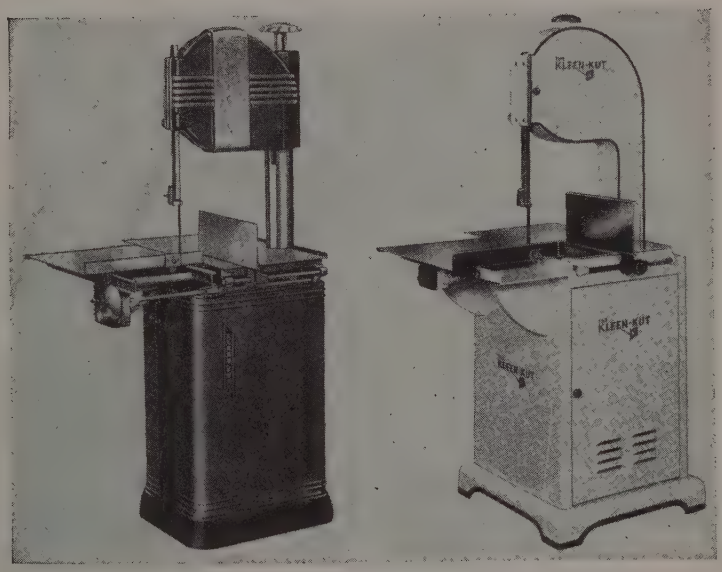


Fig. 1. Saw of former conventional design (left) and all-welded design (right).

IMPROVES THE PRODUCT

Welded design has increased the saw's overall rigidity and ngth. The top pulley support, subject to considerable stresses, stiffened by simply welding a 32-inch length of angle vertically de the housing. Rigidity was further aided by widening the n frame to the full length of the base and redesigning the door.

djusting the saw blade tension in the former model required ving the entire head of the unit up or down, which took too ch time. In the new design this adjustment is made by simply ning a rod. To incorporate this feature in the former design would have meant an excessive amount of machining.

INTERMITTENT WELDS USED

The new saw frame is made largely of formed plates, reinforced at strategic stress points with gussets and cross-braces. A minimum of material and welding is used, most parts being fused with intermittent welds like those in the table frame (Fig. 3). This type of welding obtains proper strength, avoids distortion and speeds production.

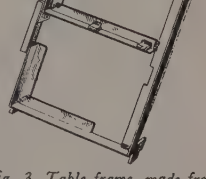


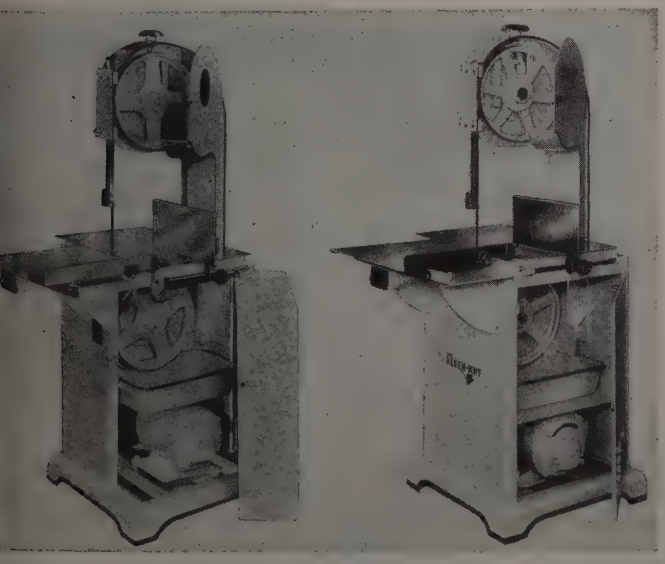
Fig. 3. Table frame, made from angles. This is the first part that was changed to welded design.

The table frame is constructed of 1½-inch angles with ½-inch bearing brace. The machine base consists of four ¼-inch plates joined by fillet welds in open corner joints. The main stand is 3/16-inch-thick steel sheet with inside fillet joints. Bearing and pin bosses are solid welded into the structure. Hinged covers are 14 gauge steel sheet.

Wherever possible, welding is done on the inside of the joint to give a smooth exterior appearance. Because materials are light-weight, all parts can be easily handled for bench-welding.

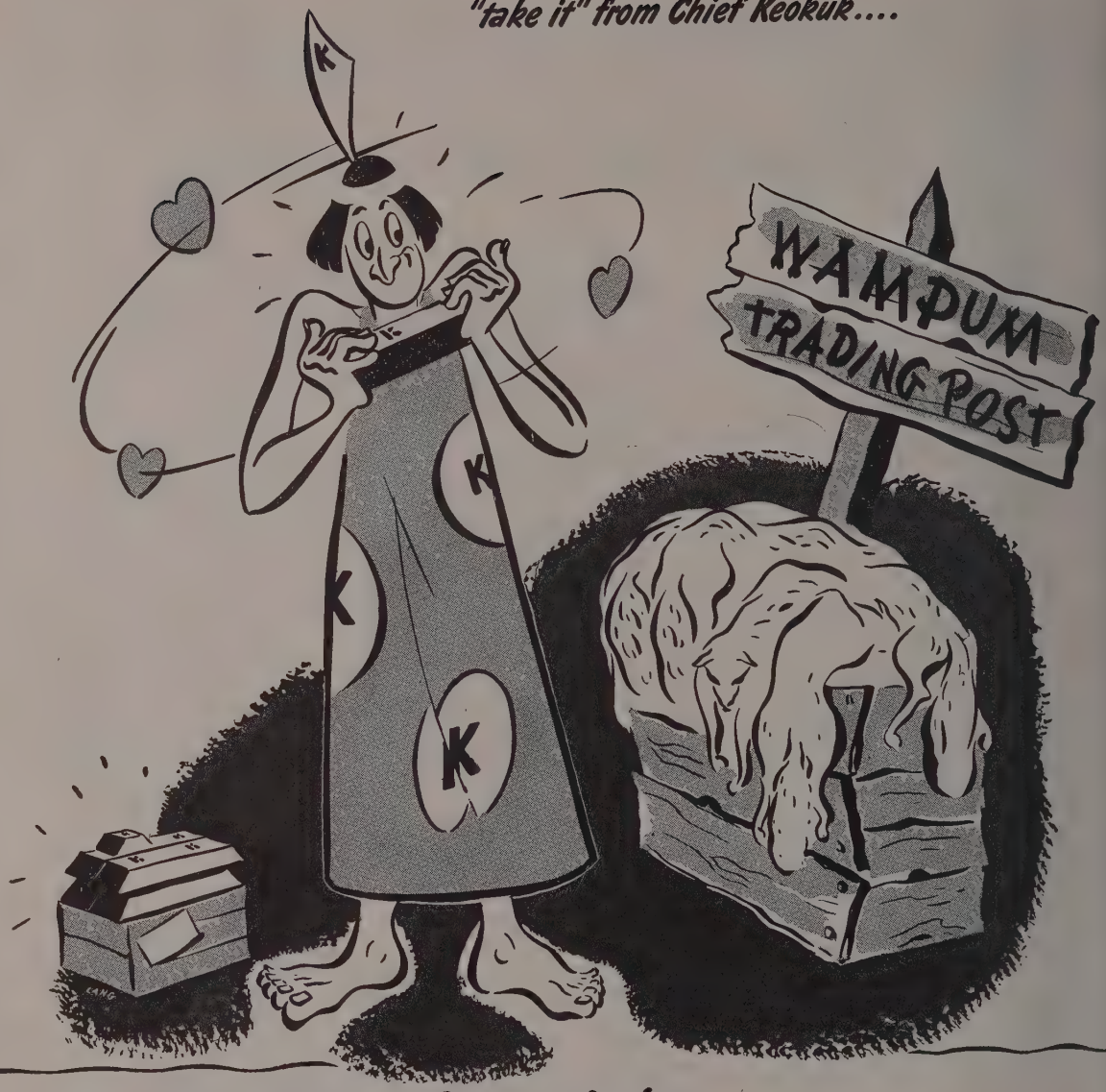
The reduction in machining operations has enabled us to double our production within the same floor area. Materials-procurement has also been simplified. Previously we ordered parts from seven outside firms; now we make them all in our own plant with simple, low-cost production facilities.

In approaching redesigning problems, our engineers have been aided by the Studies in Machine Design issued periodically by The Lincoln Electric Company. These are available free to engineers and designers who write The Lincoln Electric Company, Dept. 153, Cleveland 1, Ohio.



2. Original welded design (left) and latest welded design (right) with covers open to show interiors.

"take it" from Chief Keokuk....



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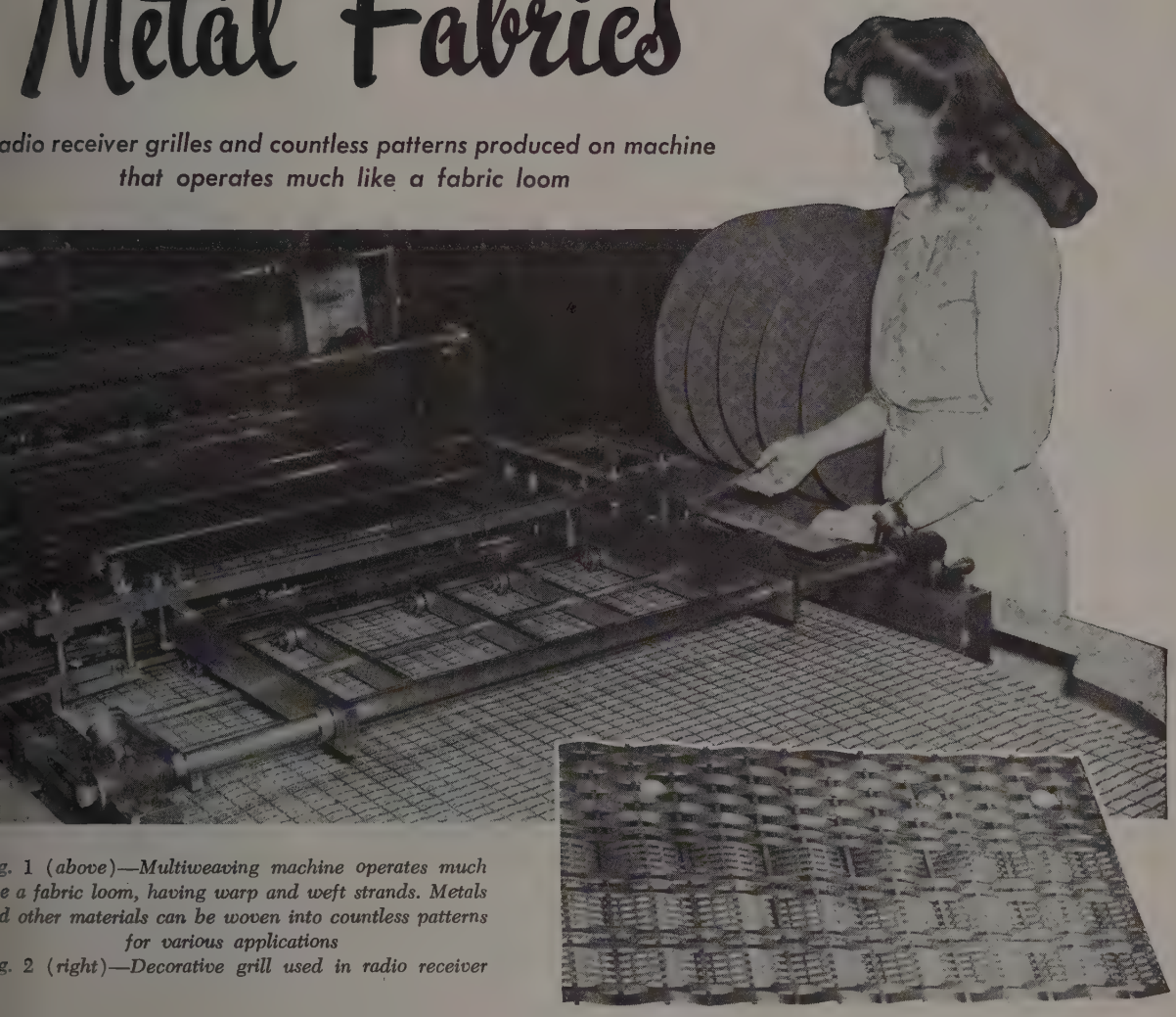
WOVEN Metal Fabrics

adio receiver grilles and countless patterns produced on machine that operates much like a fabric loom



g. 1 (above)—Multiweaving machine operates much e a fabric loom, having warp and weft strands. Metals d other materials can be woven into countless patterns for various applications

g. 2 (right)—Decorative grill used in radio receiver

BY a process known as "multiweaving," el, brass and other metals and ma- ials are woven into patterns for corative grilles for radio receivers at neral Electric Co.'s electronics de- rtment at Syracuse, N. Y.

Shown in operation in Fig. 1, the aving machine operates much like a oric loom, having warp and weft ands. Material is fed both by hand d automatically, weaving in strips then nming to size. Strands and fillers are d securely in position under tension at nts of intersection.

Weight and size of design are deter- ned by gage of material desired. Ten- e strength of multiweave varies in cordance with properties of the type d form of base materials used for ands and fillers. In the design, various ss section shapes help to give variety the woven grille, that is, round, flat, etc. Metal and other material does not vibrate under acoustical or mechanical force, and has a stiffness factor which prevents buckling or wrinkling.

No special treatment is necessary before weaving to obtain beauty of the grille, much of which is the result of brass cross strands. Brass must first be slit to width, coined and pierced. After the grille is woven it is then either cleaned and given a tarnish-preventive coat, or it is electroplated to any one of the popular finishes — copper, chrome, silver, or it may be painted or lacquered.

Plastics, woods, rubber and certain fabrics can be combined to produce a new kind of composite material in a great variety of designs and shapes. Stiffened materials can be woven with light-weight materials, in one or more of the strands, to give the finished product the properties of sturdiness and durability. Where the material is used in structural work, as in partitions or flooring supports, etc., special shapes are combined so that the finished multiweave is sufficiently rigid.

The weight per foot of finished material varies according to the type or grade of base materials used for fabrication. By reducing the thickness, using light-weight shapes, opening up weave and by using extruded shapes, weight can be kept down to desirable limits.

For the time-being, the company points out, multiweave in its present stage of development will be custom-made to meet special applications. Among the possible applications seen for the woven material are: Air conditioning and heating grilles, window blinds, many types of screens, lawn furniture, ship walks and protective railings, decorative partitions and flooring.

High Speed Steels

(*Continued from Page* 113)

known that cobalt is a gamma formi element thus broadening the austeni range by lowering the temperature transformation from alpha to gamma a raising the temperature at which eutec melting begins. Specimens of Type showed a retention of approximately per cent austenite after cooling fr 2000° F. Referring to the curve mark "after quench" on Fig. 6 the amount retained austenite increased rather ra idly to about 42 per cent for an a tenitizing temperature of 2100° F, th less rapidly to approximately 45 per ce after cooling from 2100° F, then l rapidly to approximately 45 per ce after cooling from 2300° F—lengths time at temperature being held consta in all cases.

Microscopic examinations were ma on specimens of the three different typ of steel austenitized at the various te peratures as shown on Figs. 4, 5 and Fig. 3-A through 3-G are photomicr graphs taken at X 1000 of Type A hi speed steel austenitized in steps of 5 F from 2150° F through 2450° F. A these specimens were austenitized, b not tempered. It may be observed th the specimen austenitized at 2150° (Fig. 3-A) shows a great deal of undi solved carbide and is fine grained, t boundaries around which are not clear developed.

Grain Boundaries Develop Clearly

As the austenitizing temperature is i creased the amount of undissolved ca bide decreases as the size of the auste itic grain increases and the grain boun aries develop more clearly. As the au tenitizing temperature reaches 2400° (Fig. 3-F) the carbide is almost com pletely dissolved and at 2450° F t grain size has reached still greater pr portions and eutectic melting has starte at the grain boundaries. It is obviou from a study of these seven photomicr graphs that 2300°-2350° F is the op timum austenitizing range. Similar micr scopic study was made of the Type steel over a range of 2050°-2350° inclusive. Figs. 1-A through 1-D inclu sive are photomicrographs taken at 1000 of Type B steel which was aus tenitized at 2200°, 2250°, 2300° an 2350° F. Similar conditions prevail f this type except that eutectic meltin has started at 2350° F (see Fig. 1-D To obtain the proper carbide solutio without excessive grain growth an aus tenitizing temperature of 2250° F, Fig 1-B, appears to be the optimum.

Figs. 2-A—2-E inclusive are photo micrographs taken of Type C high spee steel specimens austenitized at 2100 2150°, 2200°, 2250°, and 2300° F. A

est by far for high-speed production

In today's fast-moving production work the modern battery-powered truck has no equal. The development of modern high capacity batteries by Philco, gives trucks 10% or more additional work energy for steady, full-shift operation. Philco extra capacity types are widely used—XL, XVL, AMH and the famous long-life Philco "Thirty". Write for catalogs of specification data.

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might be expected from the high cobe content, the optimum austenitizing tem perature is apparently 2150°-2200° Even though specimens austenitized 2250° and 2300° F show almost comple solution of the carbide no eutectic me ing has started.

For most of the specimens used obtain the data in the remainder of th paper the author used the optimum au tenitizing temperatures as shown by t metallurgical microscope, that is 232 F for Type A, 2250° F for Type B, a 2200° F for Type C.

(*Continued next week*)

French Metallurgical Society Organizes

French counterpart of ASM and oth American metallurgical organizatio Societe Francaise de Metallurgie is r ported to have reorganized and is no holding regular monthly discussion me ings. Discussions center about such su jects as structure of metals and th alloys, physico-chemistry of metallurgic reactions, processing of metals, he treatments, etc.

Local sections of the society are to organized in the principal industr centers. Technical papers are publish in *Revue de Metallurgie* and in *Rev de l'Industrie Minerate,* and in a bulle issued to members.

At the first annual meeting presid over by Rene Perrin, founder preside Professor Desch, president of t British Iron and Steel Institute, p sented the opening lecture on "Ult sonic Tests". Other subjects discussed the annual meeting held last fall i cluded damping, endurance and fatig of metals; structure; investigations properties of welds.

German Powder Metallurg Covered in OTS Editions

Many aspects of metallurgy are c ered in the 1266-page collection of mic films of five selected German books powder metallurgy, metal working a analysis in possession of the Office Technical Services, Department of Co merce, Washington. All of the text is German.

One book discusses powder metallur and sinter materials including high me ing point metals and their alloys. Alu num and its alloys is the subject of t books, while a collection of monograp by 18 authors on various aspects of m nesium alloys is in another book. The fi book is a practical text for students a metal workers and provides special formation and instruction in mathemati calculation and drawing.

The most amazing steel to come out of the war!

"16-25-6"

What miracles can it achieve for you?

NOT just a steel—but a super-alloy! This amazing new Timken stainless alloy—"16-25-6"—retains creep strength even under destructive temperatures up to 1500° F.!

Until such a commercial metal could be found, America's development of the turbo-supercharger and jet propulsion was blocked. The Timken Roller Bearing Company produced the answer.

When used for turbine wheels in turbo-superchargers, "16-25-6" is heated by blasts of blistering gases as hot as 1700° F. until it actually *glows*. And it withstands these temperatures while spinning at 30,000 r.p.m.!

What uses can you envision for an alloy with the almost miraculous combination of qualities offered by "16-25-6"—high creep strength, excellent weldability, good forgeability and machinability?

Unique experience as specialists in alloy steels enabled The Timken Roller Bearing Company to develop "16-25-6" in America's hour of need. To help you select the steel best suited to *your* needs, this same experience is at your disposal. Steel and Tube Division, The Timken Roller Bearing Company, Canton 6, Ohio.

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Fine Alloy STEEL and Seamless Tubes

Specialists in alloy steel—including hot rolled and cold finished alloy steel bars—a complete range of stainless, graphitic and standard tool analyses—and alloy and stainless seamless steel tubing.

Magnesium Alloys

(*Continued from Page* 115)

Tests[13] have been made to establi the minimum sheet gage in which m chine countersunk rivets may be use limits arrived at are given in Table XV Where flush rivets are required for she thinner than the recommended minimu listed above it is advisable to use pr countersunk joints if high strength required. Main difference in maki dimples in magnesium alloy sheet is th heat is usually used to prevent cracki and to forge the material as required obtain good dimple fitup and flush s face.

At present dimples are formed w dies heated by contact with die hol ing blocks provided with electric sistance heaters. Thermocouples or s sitive bulbs for temperature controlli instruments are mounted in the heat die holders as close as possible to t dies. Sheet to be dimpled is heated

TABLE XVII
MINIMUM GAGE SHEET FOR MACHI COUNTERSUNK RIVETS

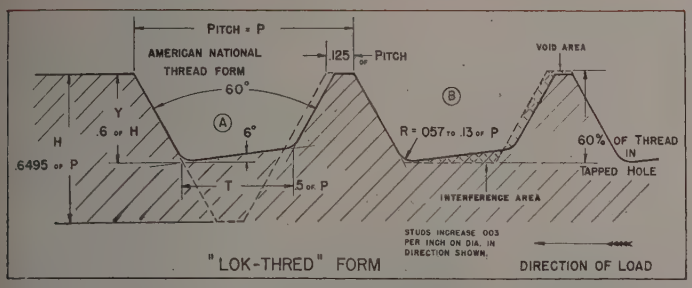
Rivet Diameter	Recommended Minimum	Absolu Minimu
3/32	0.040	0.03
1/8	0.051	0.04
5/32	0.064	0.05
3/16	0.081	0.07

contact with the dies rapidly enough allow dimpling rates of 15 to 30 min in production runs.

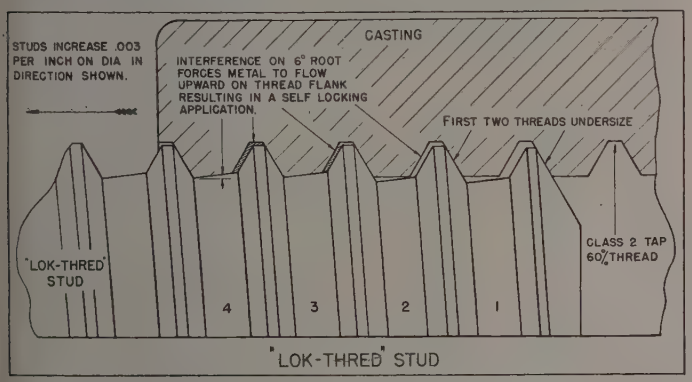
Dimpling may be accomplished sa factorily in hydraulic or pneumatic m chines which have sufficient throat handle the die holders and which velop adequate pressures to form dimple properly. As an example, a m chine with a capacity of 5000 lb handle all size dimples up to 3/16 in diameter in 0.072-in. sheet. As poi ed out above, equipment and cost c siderations usually limit the applicat of dimpling to sheet thinner than 0.0 in.

Sheet is prepared for dimpling drilling or punching holes at least per cent smaller than the rivet ho Dimples are formed in heated dies; temperatures between 450 and 550° have been found satisfactory for all she It has been found that the sheet be dimpled will reach a temperature proximately 50° F below the die te perature in the few seconds requi for making a dimple. Temperatu above the annealing point may be u on hard-rolled sheet since the total t the sheet is above the critical temp ture is only 4 or 5 sec. Dimples can formed with the dies held lower t 450° F but the rate of dimpling slower because of lack of suffici

LOK-THRED" STUDS BECOME *TIGHTER* IN SERVICE



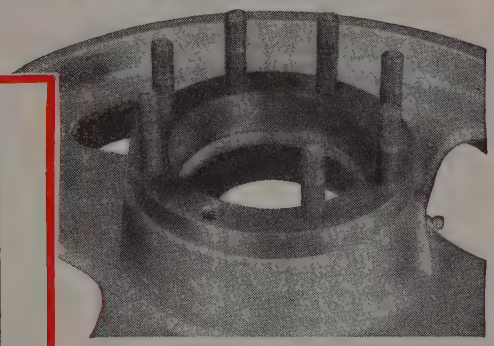
The heavy black line illustrates the "LOK-THRED" form superimposed on the American National Thread form indicated by the dotted lines, position A picturing the comparison in the male thread of each. Position B diagrams the action that occurs as the male "LOK-THRED" enters the 60% American National Thread tapped hole. The metal from the crest of the female thread (shown as "interference area") is caused to flow along the helix angle of the male "LOK-THRED" completely filling the void between the flanks of the two mating threads (indicated as "void area"). This creates a positive seal and firmly anchors the stud.



This pictures in detail the sealing and locking action that occurs as the "LOK-THRED" Stud is driven into the tapped hole. The reforming of the crest of the female thread begins at or before the second thread and this will completely fill the voids starting with the third or fourth thread. The .003" or more thread taper of the "LOK-THRED" Studs increases the interference and supplements the flow of metal just described to produce an increasingly firm anchor as the stud is driven to the depth desired.

National HEADED AND THREADED PRODUCTS

Write for "LOK-THRED" Booklet for more information.



These diagrams show why "LOK-THRED" Studs lock more securely than American National Threads, and why they are chosen for such applications as this differential axle driving flange used by the Silent Hoist & Crane Company on their "Krane Kar".

Notice in the diagrams the 6° angle at the root of the "LOK-THRED" which carries the entire normal load under high compressive pre-stress. This avoids the chief weakness of standard interference fit, which tends to cause a bursting or splitting action by placing the metal of the receiving thread under shear.

10 ADVANTAGES OF "LOK-THRED" STUDS

1. Lock securely and become tighter in service.
2. Have much higher fatigue limits than studs with conventional threads.
3. Stronger in both tension and torsion than ordinary American National Threads.
4. Carry entire normal working load on 6° angle at root of thread under high compressive pre-stress.
5. Modified American National Threads permit use of standard tools.
6. Re-usable and on any re-application less than one-half additional turn brings torque back to its original installation value.
7. Do not require selective fits.
8. Do not gall when being driven nor fret in service.
9. Act as dowels and taper pins.
10. Seal positively and eliminate added bosses and blind tapping.

THE NATIONAL SCREW & MFG. CO., CLEVELAND 4, O.

thermal head to reach the required t
perature rapidly.

Highest strength dimples in m
nesium alloys are obtained by form
the dimples with a pilot hole appr
mately 15 per cent smaller than the r
and redrilling to the required size a
the dimple is formed. A sharp e
should not be left on the bottom of
dimple after the redrill operation a
may cause cracks when the rivet h
is formed. Flats are provided on
dimple against which the rivet buck
is formed by forging a flat at the t
the dimple is formed or by removing
edge with a file or other cutting
after the redrill operation.

Following procedure is suggested
method for processing typical riveted
semblies where 56S alloy rivets are u
(1) Cut blank, jig drill pilot holes,
form block locating pin holes where
quired. Form and if necessary
parts. (2) Apply chemical treatm
called for on finished assembly. (3)
spect parts. (4) Paint parts with
chromate primer. (5) Store parts.
Drill, countersink, and dimple as
quired. Note—dimpled parts are pa
ed with zinc chromate primer a
dimpling. (7) Rivet. (8) Inspect riv
(9) Prime bucktails with zinc chrom
either locally or entire bucktail side
structure. (10) Finish paint. (11)
final inspection.

When 2S, 3S or A17ST alloy ri
are used, the above procedure may
followed but the rivets must be se
wet zinc chromate primer. If 17S
24S alloy rivets are used the proce
must be changed so that all drill
machine countersinking, and dimp
operations are performed before
parts are given a final chemical t
ment. These rivets must be set in
primer in addition to having all surf
in contact with the rivet pickled
primed.

**Assembly Protection Practice for M
nesium[14]:** Magnesium surfaces in
tact or magnesium in contact with
similar metal surfaces or wood provi
potential source of corrosion unless
quately protected. Good assembly p
tice with any metal demands that
able surface protection be provided
enclosed type structures as well
where two surfaces are in contact.
gree of protection to be used depe
on the type of joint and the condit
to which the faying surfaces are exp
in service. In general, zinc chrom
primers, sealing compounds, and ga
materials are available for the pre
tion of contact corrosion in magne
assembly operations.

Magnesium to Magnesium Assemb
When magnesium is assembled in
tact with magnesium both faying
faces should be primed with two c

Wheelabrator Case Histories point the way to More Profit for you

Read these typical case histories of Wheelabrator's profit-making performance and see how widely it is being applied to casting cleaning problems of all kinds. Then let us show you by actual demonstration what the Wheelabrator will do on your own products. We believe you will be agreeably surprised at the all-'round savings it will effect for you.

72" dia. Wheelabrator Swing Table used by H. P. Deuscher Co., Hamilton, Ohio

Swing Table Eliminates Airblast Room and Ten Tumbling Mills

The Western Land Roller Co., Hastings, Nebraska, is using a 66" diameter Swing Table to clean 3 ft. x 4 ft. side frames, pump castings for irrigation pumps and other miscellaneous castings. They formerly used 12 rattling mills and a sand blast room to do this work. They are now running from 10 to 14 tons of grey iron on this table in from 6 to 8 hours.

Wheelabrator Pays for Itself in Savings

A saving of $23.60 per day resulted by replacing tumbling mills with a Wheelabrator Plain Table at a large Cleveland jobbing foundry. Faster shipments, reduced storage space, and lower handling expenses were also reported.

Wheelabrator Saves $5,853.96 in Five Months

On one type of casting alone the New York Air Brake Co., Watertown, N. Y. saved $5,853.96 with a Wheelabrator Cabinet during the first five months' operation. The per-casting cleaning cost of this piece by tumbling was 42.6c and only 26.5c by Wheelabrating. This saving of 16.1c applied to a total of 36,360 castings.

One Man does the Work of Six

Prior to the installation of a 48" x 42" Wheelabrator Tumblast the Texas Steel Co., Fort Worth, operated a sandblast room 7 days a week, 24 hours a day. Six sandblast operators were needed. Now, the sandblast room, using one operator, handles only castings too large for the Tumblast. All other castings are Wheelabrated in eight hours.

American
WHEELABRATOR & EQUIPMENT CORP.
[illegible] Michawaka, Indiana

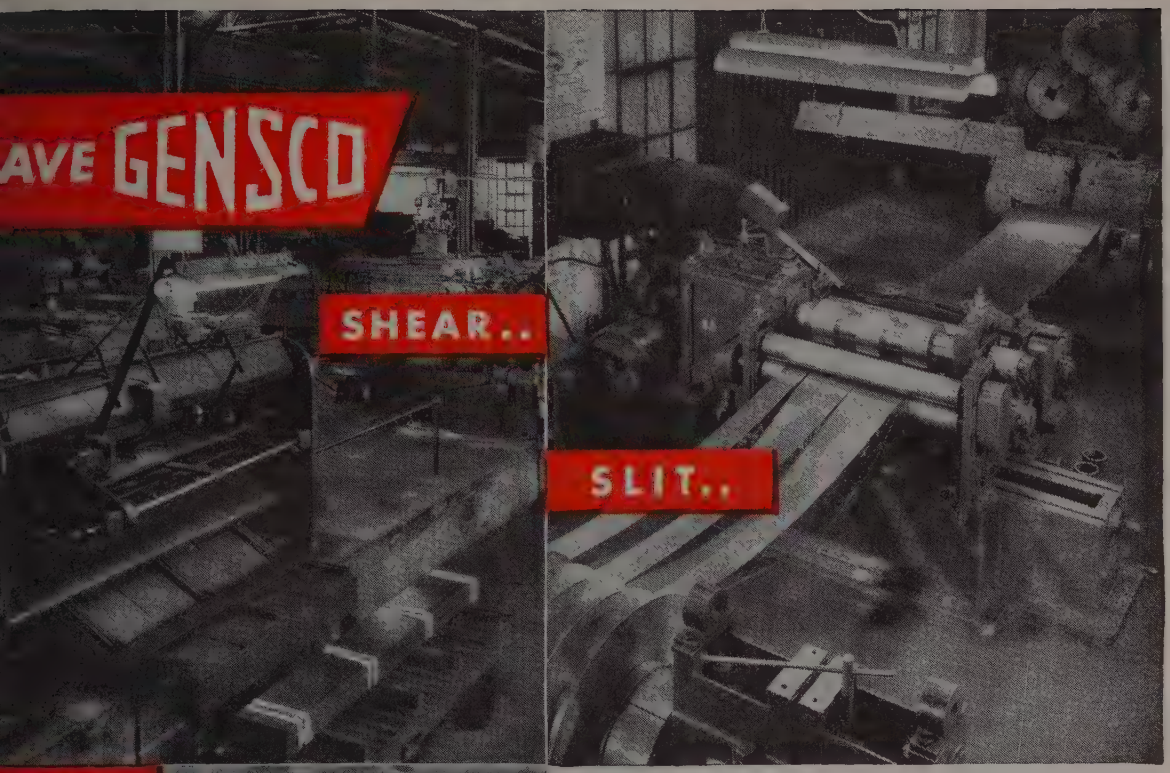
of a satisfactory zinc chromate p After assembly entire structure sho painted with a recommended pain tem. Anodized aluminum rivets are preferred for riveted structu they minimize corrosion. Fig. 33 the proper assembly of a magnesi magnesium riveted joint. If othe anodized aluminum rivets are use should be dipped in zinc chr primer before driving. Same g principles given for riveted joints to other types of joints.

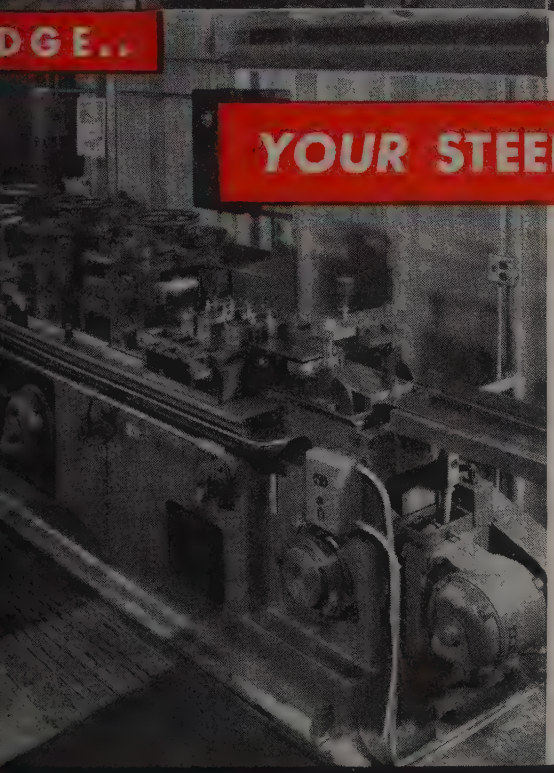
Magnesium to Dissimilar Metals ditional protection against co should be supplied when magnesi assembled in contact with dis metals or wood. Under these ci stances each faying surface shou given three coats of zinc chr primer before assembly. A selangi pound or gasket material also sho used to insulate the surfaces furth sealing compound is used, excess rial squeezed out during assembly be filleted or beaded to protec edges; if a gasket material is us should extend far enough to p water from bridging. In the rivets, bolts, nuts, and washers are they should be aluminum if po otherwise cadmium plated and erized steel are preferred. Aft sembly the entire structure shou painted with a recommended pain tem. The suggested methods of a blying magnesium in contact wit similar metals or wood are sho Figs. 34 and 35.

All steel parts, such as bolts and ers, used in contact with magn should be cadmium plated, and if are to be painted they should be erized after plating. Aluminum bolts and rivets should be anodized rivets (exception 56S) should be d in wet zinc chromate primer before ing. In general, all inserts used in nesium fabrication should be cad plated.

Spot Welding: Wrought magn alloys can be readily joined by el resistance spot welding. Spot welc used mainly in low stress applic and in high stress applications not ject to excessive vibration. All alloys and extrusion alloys of magn can be welded. In welding dif alloy sheets or extrusions to each ease of welding depends on alloying stituents in the materials; the identical the composition of the rials, the easier they are to weld. terials with different alloying ele can be welded but in general re more careful control of welding c tions.

Both alternating and direct-cu welders of the type used in spot





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ing aluminum alloys have sufficient
pacity and provide adequate contro
current and electrode force to make g
welds in magnesium alloys[23]. While fa
good welds can be made with wel
of the type usually used for fer
metal weldings, these machines
mally are not provided with accu
enough current and electrode force
trols to spot weld structures subjec
rigid specifications, such as those
forced in aircraft work.

Standard alternating current mach
equipped with an electronic timing
vice to give accurate control of wel
time are used. The kilovolt ampere
demand is relatively high when wel
magnesium on alternating current eq
ment. This will go as high as 450
when welding sheet approximately 0.
in. thick.

Direct current machines based on
trostatic and electromagnetic stored
ergy equipment are especially re
mended for spot welding magnes
The kilovolt ampere line demand
this type is appreciably less than
for alternating current machines for
same gage sheet. For example, mat
0.100-in. thick requires only abou
kva. The pressure mechanism of st
energy machines should be adequat
minimize electrode deflection and to
vide rapid dynamic pressure follo
when the weld is made.

Electrodes for spot welding are
from hard, high conductivity coppe
loys meeting RWMA class I speci
tions. These electrodes should be
cooled, preferably to within about
of the welding face. Hard rolled
copper is sometimes used for spe
shaped offset electrodes. The tip
tours of the electrodes are impo
considerations. Those used on mag
um, the ⅛ to $\frac{7}{8}$-in. by 4 degrees
the 7 degree cone, and 2 to 8-in.
tips, are shown in Fig. 37. Dome
are preferred.

Spot Welding Procedure: Areas
spot welded should be cleaned fr
pickle coatings or of oxidized sur
on unpickled sheet. Present practi
to clean by wire brushing both sid
the sheet in the area to be welded,
a brush of steel wire 0.003 to 0.0
in diameter rotated at a peripheral s
of over 2500 fpm. This is followe
rubbing the side of the sheet to be
trode contacted, with No. 3 steel
or with No. 160 to 240 aluminum
cloth.

Small areas may be cleaned by
using only steel wool or abrasive
Stainless steel wool is preferred be
of its nonmagnetic properties. Alum
oxide cloth is used because it resu
minimum surface contamination.
is the possibility that chemical cle
may soon be available which wi
superior to mechanical cleaning me

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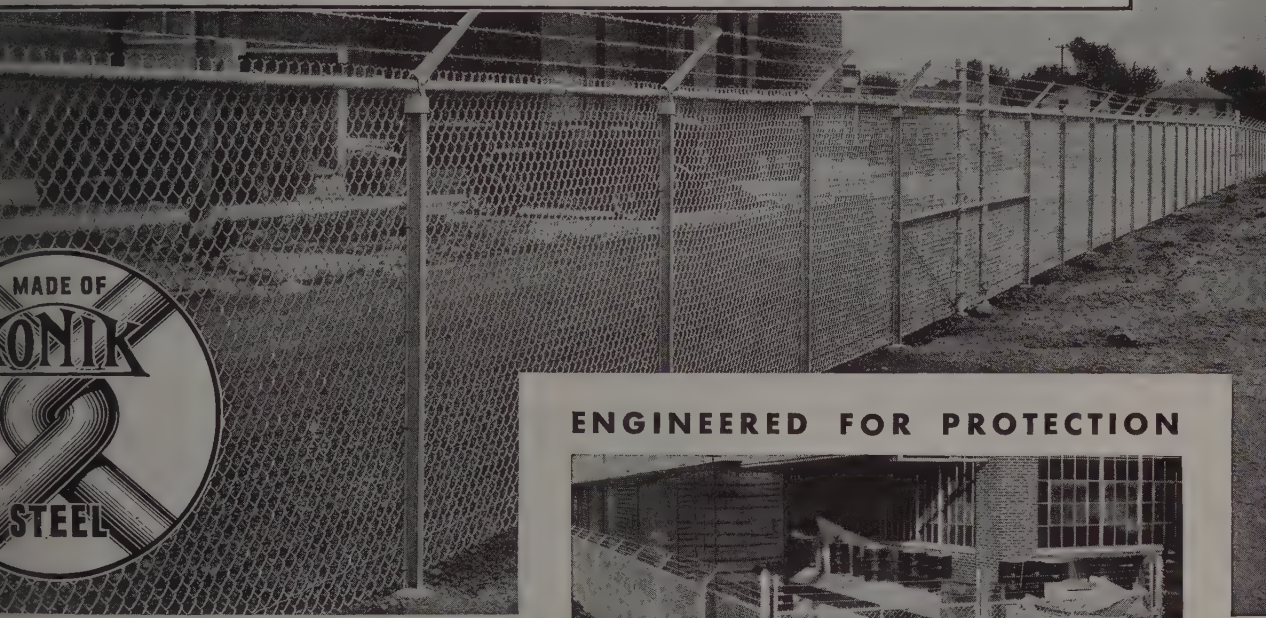

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from the standpoint of cost and thord ness of cleaning action.

In setting up a machine, proper sure, current, electrode contour, should be selected to result in a co diameter spot, as determined by stre requirements, and to have required p tration. In making the setup care sh be taken to make sure welds are from spitting, cracking, or porosit curve showing the range of spot diameters in all alloys recommende typical structures is given in Fig. Tip temperature generally used in w ing all materials is one which is as as possible yet does not result in densation on the electrodes.

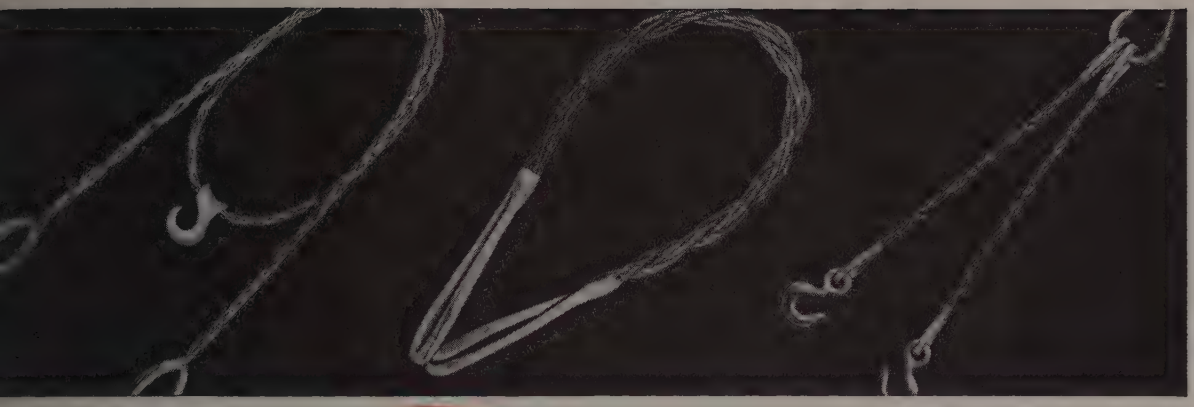
In spot welding with alternating rent equipment the current may be ied over a relatively large range by an autotransformer, and in additio phase shift device to provide more cate adjustment. It is important that voltage be kept as constant as pos during welding. When several mach draw current from the same supply and there is danger of line voltage d ping below normal, a nonfiring de to prevent welding should be emplo or a signal arrangement should be to indicate that a poor weld has made.

In spot welding with electrostatic chines the condenser capacity is an portant factor. When welding sheet 0.020 to 0.130-in. in thickness, the chine should have condenser cap ranging from approximately 200 to microfarads. The transformer turns varies the current peak during we on condenser discharge machines also varies the time of discharge thr the weld. Best welds on magnesium obtained by using a relatively high ratio.

In spot welding with electromag stored energy machines, lower pres during actual welding are used tha the case of electrostatic type mach For heavy gages of material a pre pression cycle is also used. Freq cleaning of the electrodes is impo the same as when welding with alte ing current and electrostatic equipr

Proper adjustment of machine set is a very important point in the pro tion of strong consistent welds. machine settings which are prescr are only approximate and should only as a guide. A number of trial w should be made using various current voltage settings until a weld of the sired diameter or strength is obta Diameter of the weld may be determ by tearing apart a welded sample measuring the size of buttons w are pulled from one of the parts.

When pressure is applied to the terial by the electrodes, a small face area has intimate contact. As rent is applied and the weld slug fo



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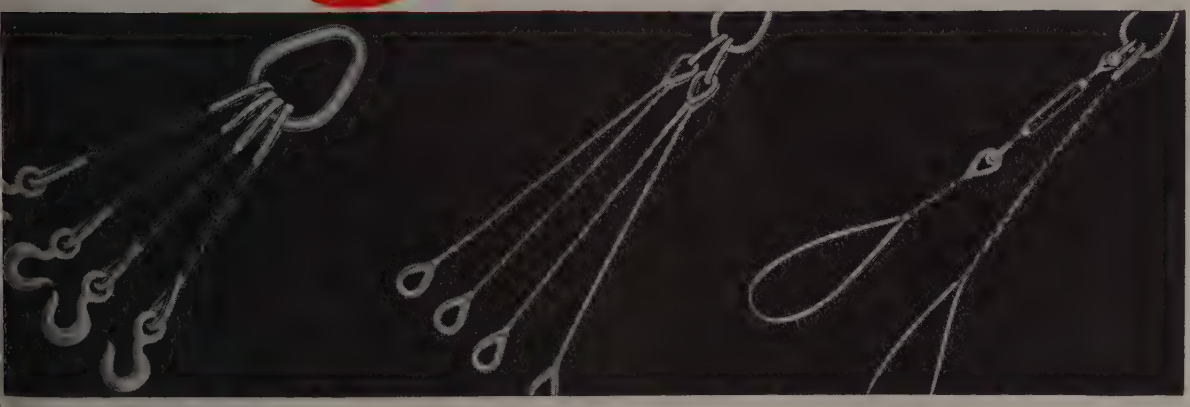

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a pressure ring is produced arou weld slug at the interface. Pressur usually is from 3/32 to 1/8-in. lar diameter than the weld slug a creases as the slug increases in s the pressure follow-up is too slo pressure ring will be too narrow expulsion will result. If the tip c is too sharp the pressure ring w too narrow and the molten meta expands will spit out. Expulsion of between the parts being welded m eliminated by increasing the w pressure, decreasing the welding c increasing both the pressure an rent, or by increasing the radius electrode as well as both the pr and the current. In some cases a thorough cleaning of the materia be necessary.

Pickup can be reduced by ad cleaning of the surface and prope ing of the electrodes to reduce s heating. Care must be taken th electrodes are not cooled to tempe which will cause condensation of ture on the tips, since this conde will increase pickup. A good met controlling electrode temperature sists in supplying water to the elec only during the welding operati means of a solenoid valve and ti lay actuated by the welder cont is important that the electrod cleaned frequently by polishing emery cloth. As many as 100 t welds can be made on hard rolled between tip cleanings. On other the electrodes must be cleaned every 10 to 20 welds.

Penetration should be not less 30 per cent or more than 80 pe into each of the parts welded. penetration as well as diameter weld may be determined by cut cross section through the weld, fi the surface with a fine file or cloth, and then etching for 10 se 10 to 50 per cent solution of ac tartaric acid. This etch will dark weld zone sufficiently to make i sible to measure weld diameter and tration in each piece. A diagra sketch of a cross section of a spo is shown in Fig. 39.

Electrode indentation is a funct electrode tip contour, pressure, an rent. To eliminate tip indentati gages up to 0.064-in., a flat tip m used against the outside surface part being welded. In heavier s flat tip on one side will result in u penetration. Therefore indentation be corrected by increasing the areas of both tips.

Electrode deflection may be mized by maintaining the uppe lower arms of the spot welding m sufficiently rigid. Excessive def causes inconsistent spot strength regularly shaped welds, expulsion, ing, excessive pickup, and misalig

of the parts being welded. Whe equal thicknesses of magnesiu welded, it is important that an ele with large contact area be used thick material, otherwise the resu be a weld with no penetration o insufficient penetration into the sheet.

Pickup during welding leaves posit of copper on the magnesiu face which will accelerate corrosi prevent this after welding, spot joints should be cleaned with alu oxide abrasive cloth or aluminum polishing compounds on buffing After this the entire part should be a suitable chemical treatment and according to procedures which described in a subsequent section. and porosity in spot welds can tected by microscopic examinati the weld or by radiography.

REFERENCES

13 Trans. Am. Soc. for Metals; 26th convention (1944)

14 Based on recommendations of Dow ical Co., Midland, Mich.

(*Continued in later issue*)

Lapointe Company Rele Sound Movie on Broach

To drive home the important that broaching now holds in the field of mass production of metal ucts, Lapointe Machine Tool Co., son, Mass.—with the co-operati several well-known user companie produced a color film, with soun titled "Surface Broaching".

This 16 mm film, which re about 18 min to run off, deals modern broaching as a means of ing up production of a wide vari things. These include: Loom frame flatiron bases, automobile be wrenches, pliers, and automobile cy blocks. Workholding devices are revealed.

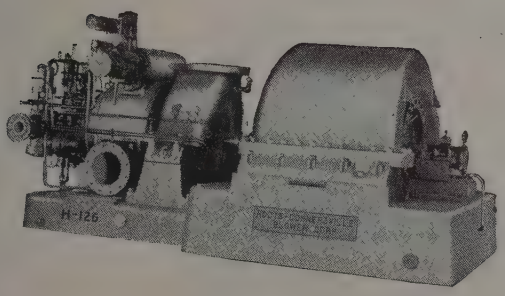
Arrangements can be made fo showing of this film to interested by writing to Department W-31, address given above. In some arrangements also can be made f accompanying talk on broachin Kenneth N. Macomber, chief en of the company.

—o—

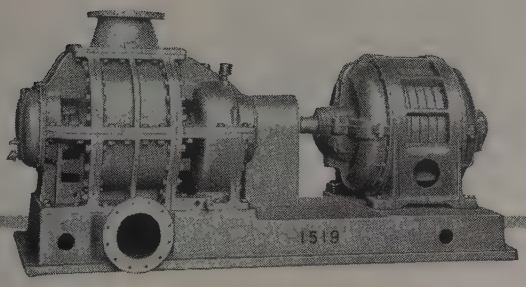
A recent issue of the Engineerin periment Station of Ohio State Univ Columbus, O., bulletin No. 126, stress-strain relations in ceramic rials. Written by J. O. Everhart, re professor and Marjorie Lassettre, re assistant, booklet covers apparatus procedures used in testing, a disc of characteristics (with diagrams) materials used in making ceramic ucts.

EQUALLY GOOD

at pushing



or pulling



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Control of Vibration

(*Continued from Page* 122)

ard types of mountings is as shown i following typical example: (It shoul remembered that there may be condi other than those stated here that w call for a variation in this procedure such cases, it is advisable to seek a of engineers experienced in vibr control.) An electric motor weig 3200 lb rests on its foundation at points. It is determined that a point resilient suspension can be the load being equally distributed, 8 on each mounting.

The motor, which operates at rpm creates vibration due to a sli

TABLE XV
SPECIFICATIONS FOR TUBE FOR MOUNTINGS
(Lord Mfg. Co.)

Part No.	Rated Deflection, In.	Rated Loa
H-1001	0.065	23
H-1002		30
H-1003		60
H-1004		90
H-3002	0.068	70
H-3004		140
H-3006		180
H-5019	0.078	86
H-5006		175
H-5017		225
H-5013		275
H-5020		325
H-9001	0.092	230
H-9002		350
H-9003		430
H-9004		510
H-9005		590
H-9006		670
HS-3001	0.108	450
HS-3002		550
HS-3003		650
HS-3004		750
HS-3005		850
HS-7001	0.123	690
HS-7002		810
HS-7003		935
HS-7004		1060
HS-7005		1200
HS-7006		1325
HS-7007		1450

unbalanced rotor. Therefore, the f frequency of vibration from the ro 1200 cycles per min. Condition such that 81 per cent, or more, vibr absorption would satisfactorily over the objectionable transferred vibr Table XIV shows that this require insulation ratio of at least 2.5.

Referring to the bulletin's sele guide tables given in connection the standard types of U. S. Royal ber mountings, it is seen that the 200B in the Three-Angle Series, p. recommended for loads up to 90 thus qualifying it for this installatio quiring 800 lb per mounting. The umn at the extreme right of this table shows that this mounting any load from 700 to 900 lb will satisfactory vibration absorption i forced frequency of the mechani 1000 or more as indicated in the co at the extreme left.

To determine the full amount bration absorption, reference is ma the deflection curve on p. 39 of the

n which shows that a Type 200B unting under a load of 800 lb will de- t approximately 0.27-in. Fig. 37 ws that a mounting with 0.27-in. de- tion will have a natural frequency of cpm. Dividing the forced frequency 1200 this natural frequency gives —— = 370

4.

This insulation ratio is appreciably ater than the minimum of 2.5 re- red. According to the data in Table X the percentage of vibration absorp- n should prove to be more than 87.5 cent. Accordingly the selection of Type 200B Mounting is correct and l satisfactorily absorb the vibration.

Vibration Eliminator Co., Long Island, Y., asserts that effective isolation is the mere interposition of a resilient terial or system. Incorrectly applied lation may even aggravate the vibra-

TABLE XVI

ECIFICATIONS FOR TUBE FORM SNUB- BING MOUNTS

(Lord Mfg. Co.)

raight Tube Part No.	Defl. in Inches	Rated Load in Lbs	Straight Tube Part No.	Defl. in Inches	Rated Load in Lbs
5204	1/16	330	*30208	1/16	595
5205	1/16	380	*30210	1/16	705
5206	1/16	425	*30212	1/16	815
5207	1/16	475	*30214	1/16	925
5208	1/16	520	*30216	1/16	1035
5209	1/16	570	*30218	1/16	1145
5210	1/16	620	30308	3/32	595
5211	1/16	670	30310	3/32	705
5304	3/32	285	30312	3/32	815
5305	3/32	325	30314	3/32	925
5306	3/32	365	30316	3/32	1035
5307	3/32	405	30318	3/32	1145
5308	3/32	450	30408	1/8	520
5309	3/32	490	30410	1/8	620
5310	3/32	530	30412	1/8	715
5311	3/32	570	30414	1/8	810
5404	1/8	235	30416	1/8	905
5405	1/8	270	30418	1/8	1005
5406	1/8	305	30608	1/16	450
5407	1/8	340	30610	1/16	530
5408	1/8	375	30612	1/16	610
5409	1/8	410	30614	1/16	695
5410	1/8	440	30616	1/16	780
5411	1/8	475	30618	1/16	860

untings for lighter loads are not listed here.

y condition. To be of any value the lation material or system must be re- ent under the condition of installation, under the impact of operation, it st have a certain predetermined action. Briefly, if the isolation system is under- ded it cannot be resilient. Its reaction l be the same as that of a solid mass, l it will transmit vibration. At the er extreme, if the isolation system is rloaded, fatigue results thus bringing ut a complete breakdown of the re- ency factors. It is clear to the trained ineer, therefore, that the isolation ma- al must be properly loaded for maxi- m isolation efficiency.

n the case of impact at low frequency h as that set up by drop hammers, ging hammers and punch presses, the ineer is frequently concerned that the

use of isolation may reduce the effi of the impact blow. Experience has that this is not so; efficiency of t pact blow may even be increased use of isolation. In some cases, alt isolation was installed for the mo vious reasons of preventing the tra sion of vibration to the building str or to other equipment doing more d work, it was discovered that the chines so isolated operated more ciently.

While isolation application is, i eral practice, more than the prod the slide rule, a basic guide has correlated into a precise formula. I stance this formula is based on th of the operating frequency of the ma or other equipment to be isolat natural frequency of the isolating s This ratio and the resulting isolatio

TABLE XVII

SPECIFICATIONS FOR TYPES AND 12 MOUNTS

(MB Mfg. Co., Inc.)

Part Numbers — Tension Type 11	Part Numbers — Compression Type 12	Static Lo Pounds 1/16-in. deflection	1 de
1150.04	1250.04	.25	
1150.06	1250.06	.38	
1150.08	1250.08	.50	
1150.12	1250.12	.75	de
1150.15	1250.15	.94	1/
1150.22	1250.22	1.4	
1150.32	1250.32	2.0	
1150.46	1250.46	2.9	
1186.26	1286.26	1.6	
1186.38	1286.38	2.4	
1186.56	1286.56	3.5	
1186.83	1286.83	5.2	
11861.2	12861.2	7.5	
11861.8	12861.8	11.0	
11862.6	12862.6	16.0	
11863.8	12863.8	24.0	

ciency is shown in the graph, Fi While this graph does not consid additional factor of internal damp the isolator it does give an ex working formula for the engineer.

To complete the formula, it is nec to determine the natural frequency isolator as well as the disturbin quency of the equipment. The la usually the operating frequency of est amplitude and can be ascertain revolutions per minute, number of ders in some types of machines, and factors depending on the equipmen conditions encountered. Any resilie terial or system has a natural frec depending on its deflection under load. The formula which determin frequency of the isolator is:

$$F = \frac{188}{\sqrt{D}}$$

where F is the natural frequenc D is the deflection of the isolator load. Any selected isolator with imposed load will not have a natu quency.

If the isolator is loaded sufficie deflect ⅛-in., a natural frequency proximately 530 is obtained. W operating frequency of 1100 there

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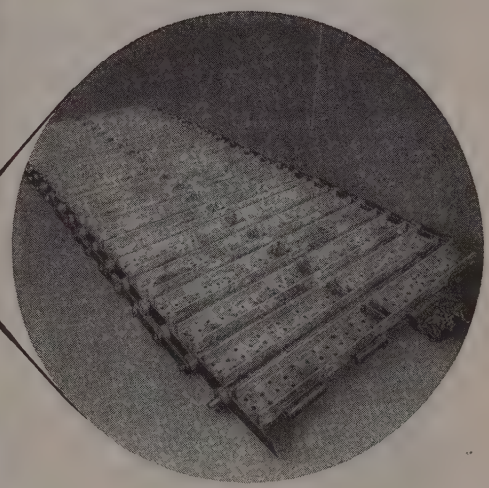
(Hot rolled and high temperature annealed)



High temperature continuous annealing furnace and high temperature heavy duty belt conveyor, both of which use JESSOP Heat-Resisting Stainless Steels. Photos courtesy Industrial Metal Fabricators, Ltd., Detroit, Michigan.

The above types of Jessop Chromium-Nickel Stainless Steels will be found suitable for practically all high temperature applications and certain corrosion conditions where high strength plus resistance to corrosion, oxidation, and scaling is required. JESSOP Heat-Resisting Stainless Steels can be formed, welded, and fabricated by the technique similarly used for other austenitic alloys.

JESSOP Heat-Resisting Stainless Steels are furnished in sheets, plates, bars, and castings. Consult us for assistance on your particular high temperature requirements. Send us details of your problem today.

JESSOP STEEL COMPANY
Washington, Pennsylvania
Tailor-made Specialty Steels

be approximately 66 per cent isola efficiency. If the static load is incre to a point where the deflection of isolator is ¼-in., the result would h natural frequency of 375 and an is tion efficiency of 90 per cent for the s operating frequency of 1100.

Deflection charts are provided most of the various styles and size

TABLE XVIII
TYPE 13 MOUNTS
(MB Mfg. Co., Inc.)

Part Number	Static Load in Pounds for deflection of 1/16-in.	1/10-in.
1310	62	100
1312	74	120
1315	93	150
1318	112	180

Dimensions given for zero load.

isolators made by this concern in company's manual; accurate calcula of isolation efficiency and freque ratios thus can be made for each ins lation employing standard mounts. lowing is a representative list of stand isolator units made by the company:

Style **Description**

R2—A bonded rubber type that is s plied in lengths necessary for construction of base assemblies various machines. Bases can be nished for machines weighing f 800 lb to several tons and also ca supplied as a complete unit. Nor deflection under load is ¼ to ½ Entire freedom of motion is mitted in a vertical plane where rubber operates in shear, but h zontal motion is restricted bec in this plane rubber acts in comp sion.

R3—A small compact unit using rub in shear which provides an in deflection of approximately ½-in. low frequency machines. Unit be supplied in any load capacity f 50 to 240 lb.

23—This unit is the basis of a numbe sizes for the accurate control of sential loading factors of the is tion material (natural cork). Th units permit a distribution of the lation in varying capacities as quired by the load bearing surfa or areas. In planning installation at each point of support is estima allowing for impact in addition static load.

121—Available for an effective range between a few hundred pou per unit and 2000 lb. Rubber iso ing medium deflects approxima 0.18-in., and isolates vibrations operating frequencies as low as cpm and under most conditions considerably lower frequencies.

410—Maximum load capacity of e unit is 1000 lb. Inner housing

supporting surface to which machine is bolted floats within the base housing and these housings are separated by cork on top, bottom, and sides. While all of the component parts are carried in stock, each unit is assembled to the customer's specification for load.

k Plates—Natural cork plates require the same accurate loading for maximum efficiency as do other systems of isolation. The table of loadings that has been calculated for the other products listed here may be used just as successfully for these cork plates. Plates are made in all widths up to 24 in. and in thicknesses of 1, 1½, 2, 3, and 4 in.

ls—Furnished in two types, one using natural cork the other style using rubber in shear. Both designs are supplied in lengths to meet conditions, and the built-in isolation units are located according to the distribution of the weight of the machine. Cork rails are recommended where contact with oil is possible.

Vestern Felt Works, Chicago, has deped one particular grade of felt that xpected to perform well as an aber of vibrations and for keeping maes in alignment. This grade is known No. 201 Grey, hard sheet felt. It is affected by oil, grease, water or dirt. maximum load that the material will nstand is 30,000 psi and will absorb

TABLE XIX
VIBRATION INSULATION
(U. S. Rubber Co.)

lation atio	Vibration Absorption, Per Cent	Results Attained
.0	98.9	Excellent
.0	93.3	Excellent
.0	87.5	Very good
.5	81.1	Good
.0	66.7	Fair
.5	20.0	Poor
.4	0.	None
.0	(Resonance)	Worse than if no mountings were used

uencies as low as 2400 cpm with a mum thickness of felt required. It is mmended for installations where ment is important and the static pres- is high.

nother grade of felt that has been is No. 8400-XH Grey. Maximum that this material will withstand is 00 psi. This material has been used r forging hammers to prevent chips etal from getting in under the base e hammer and throwing the machine f alignment. The No. 8400-XH Grey fter than the No. 201 Grey and is fore suggested for use under ma- s where perfect alignment is not too rtant and where the static pressure t too high.

Thermal Requirements

(*Continued from Page* 132)

volatile matter in all of the iron b materials. The effect of this cor upon the heat requirements of th nace shaft operations will be dis later in this article.

A burden (Table I) calculated t duce 1 gross ton (2240 lbs) of iron 90 lb of flue dust, and 67.2 lbs cent) scrap contained the foll weights and percentages of ma

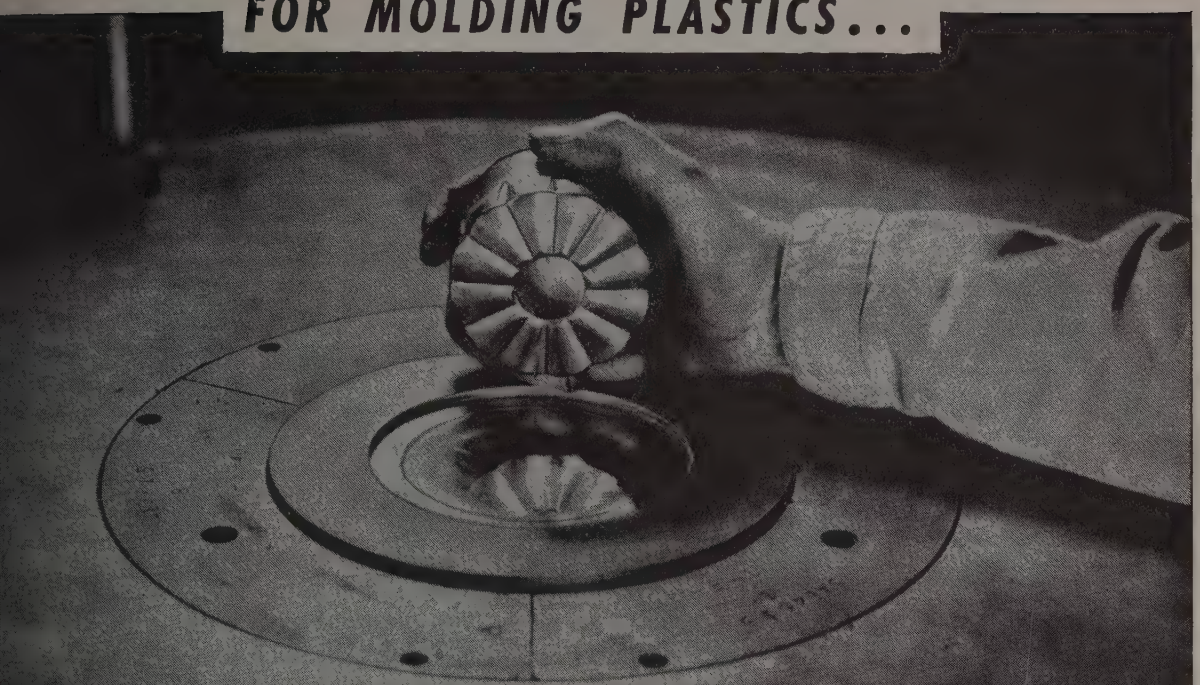
	Lbs	Pe
Sinter	1400	= 4
Concentrates	1200	= 3
O. H. slag	300	=
Ferro-slag	250	=
Roll scale	300	=
		9
Scrap	350	
Coke	1350	
Limestone	300	

Attention is called to the perce of sinter and concentrate used. were purposely selected to emp a condition which it is believed quently misunderstood. Freedom volatile matter is the chemical, and particle size the physical, propert sinter which are most favorable work of the blast furnace shaft ope Reference to Table II will show t of the iron-bearing materials of th den are free from volatile matt same as the sinter and therefore i respect they are just as favorable work of the shaft as the sinter. tual practice the author has used per cent sinter in a furnace b the other 2.50 per cent being hearth slag, and such a burden not be any more free from volatile than the one shown for the heat b calculation and therefore of no g advantage to the furnace operation respect.

Size Range Varied

The sinter in question would h particle size range of 1-in. maxim 100 mesh minimum, and the raw centrate a range of minus 8 me dust. Every blast furnace opera familiar with the physical charact of the other burden materials. Obv such a mix would contain a larg centage of "fines." Character fines, and the percentage of th relation to the volume and veloc the gas column rising through th nace, are important considerations than the property of fineness. In practice the author has used a va percentage from 0.00 to 35 per c raw concentrate in the burden f express purpose of getting the *adv* of the fines because of their abil *recover* heat in the furnace shaft. all heat is absorbed from the s

FOR MOLDING PLASTICS...



DISSTON MOLD STEELS

Manufactured to meet your individual needs

Whatever your plastics mold requirements, you are certain to find among these three specialized Disston Mold Steels one that will meet your needs exactly.

FOR DIFFICULT SHAPES AND SHORT RUNS

PLASTIRON . . . a low carbon steel that is easy to work, withstands extreme hobbing, and is exceptionally well suited for intricate forms.

FOR GENERAL SERVICE AND MEDIUM RUNS

PLASTALLOY . . . a low carbon steel having the right amount of chrome and nickel to assure great core strength and long wear, yet permit easy hobbing.

FOR HARD SERVICE AND LONG RUNS

PLASTIKUT . . . a "cut mold" steel for maximum core and case strength. Must be machined instead of hobbed, but because it stands up extra long in service, PLASTIKUT is very economical.

ALL PROVIDE THESE ESSENTIALS

Each of these Disston Mold Steels is composed of carefully selected raw materials and produced in Disston electric furnaces. Modern steel practice keeps every process under rigid control. Each is melted and hot-worked with great care . . is carefully inspected to assure freedom from porosity and inclusions . . . is uniformly sound, carburizes evenly, and produces unusually smooth cavities.

● If you have a special mold or hob problem, let Disston engineers and metallurgists help you solve it. You may consult them freely, without charge or obligation . . . and in confidence.

Write for Folder Contains much useful information which may help you get best results in your use of mold and hob steels.

ESTABLISHED 1840 REG. U.S. PAT. OFF.

STEEL . . . Everybody who wants to obtain steel can help himself to get it by immediately starting scrap into the channels that serve steel mills.

HENRY DISSTON & SONS, INC., 326 Tacony, Philadelphia 35, Pa., U. S. A.

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Achorn Steel Company
381 Congress Street
Boston 10, Mass.

METROPOLITAN NEW YORK AND NORTHERN NEW JERSEY
Bright Steel Corporation Offices & Warehouses, 528-540 West 22nd Street, New York 11, N. Y. and 224-236 Culver Avenue, Jersey City 5, N. J.

nward the ratio of surface to mass most important factor in that action it is therefore desirable to use as a percentage of fines as other factc the operation will permit. Every furnace burden must be calculate produce an iron of a desired che specification and the percentage of which can be used in the burden w determined by the chemical compo of the sinter, or the economic adva of using some other material. I other burden materials have the characteristics as the sinter a var in the percentages used does not the overall characteristics of the operation of the furnace.

(Continued in next issue)

(1) J. E. Johnson Jr., "Principles, Operatic Products of the Blast Furnace."
(2) Walter Mathesius, "Use of High Blast in Mesabi Practice," AIME Yearbook,
(3) S. P. Kinney, P. H. Royster and Joseph, *Technical Paper* No. 391, Bur Mines.
(4) Ralph H. Sweetser, "Blast Furnace Pra 1938.

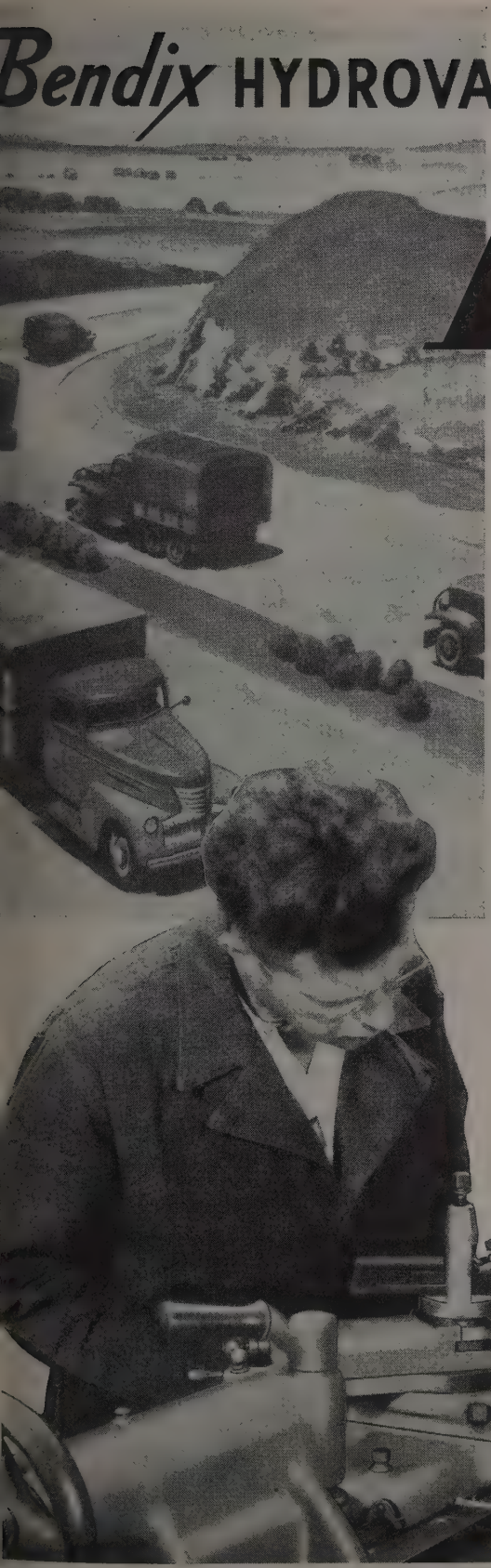
Report Gives Data on German Tool Industry

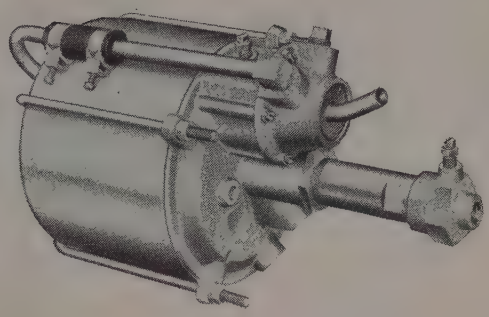
Information on employment, pr tion, material specifications, heat ment and shop practices in 27 vidual German plants manufact rock drills, compressors, pumps, and other accessories, has shown a gap between precise technical know of German metallurgists and the cation of metallurgical science to practices. This fact is brought o a report prepared for the Offic Technical Services, Washington, F. Shepard, chief metallurgist, soll-Rand Co., Phillipsburg, N. J

Observations and comments o general condition of the industry ways in which it differs from its A can counterpart show that German neers used metals handbooks and o by brand name, leaving the respons for selecting the proper material suppliers' metallurgists. The report out the fact that the high cost o terials compared with cost of la probably responsible for the G habit of paying more attention t sign than to metal specifications. found that labor for polishing su smoothing corners and doing othe chining to reduce the danger of is used lavishly compared with Am practice.

Structural welding and flame h ing are not regularly used and amples of high-frequency ind hardening equipment were found. hand drills and other features of man mining practice enable dri to be more brittle than Am methods would permit.

Bendix HYDROVAC 1ST IN POWER-BRAKING





precision machined on SOUTH BEND LATHES

The Bendix Hydrovac power braking unit, proved by more than a million installations and billions of miles of service, is one of many outstanding technical achievements by Bendix Aviation Corporation which played important roles with our fighting forces and are now contributing to peace-time enterprise. Hundreds of South Bend Lathes are used by Bendix Aviation Corporation in their experimental laboratories, toolrooms, and manufacturing departments for the development and production of their products.

At left: Technician Henry Janowski, Experimental Department, Bendix Products Division of Bendix Aviation Corporation, using a 16-inch swing South Bend Precision Toolroom Lathe to machine the end plate for an experimental Bendix Hydrovac.

SOUTH BEND LATHES

South Bend Precision Engine Lathes and Toolroom Lathes are made in five sizes — with 9″, 10″, 13″, 14½″, and 16″ swings. Precision Turret Lathes are made in two sizes: Series 900 with ½″ maximum collet capacity and Series 1000 with 1″ maximum collet capacity. Please state size and type of lathe when requesting catalog.

LATHE BUILDERS SINCE 1906

SOUTH BEND LATHE WORKS

429 EAST MADISON STREET
SOUTH BEND 22, INDIANA

Repetitive Lathe

(*Concluded from Page* 134)

be performed in a few minutes witho any disturbance of the spindle bearin or chuck lock mechanism.

Coolant arrangement is inbuilt a follows normal practice except that incorporates a high pressure reversi pump driven from the motor and ca able of maintaining a high velocity co ant supply, irrespective of the speed direction of rotation. An adjustable no zle is fitted with twin jet rows, one the cutting tool point and the other adequate chip washaway from the d meter control plate. The whole machi is mounted on a heavy cast iron pedest type cabinet with three-point mounti incorporated for rigidity. Access to interior is by a quickly detachable ste panel. Normal M.E.M. contactor, w thermal overload trips is fitted and th with remote push button control. T whole machine is isolated by a S.E. fused isolator switch.

The work feed is of weight type d signed to enable the bar to be fed fr the machine end. Collet release and chucking is by a quick-acting le incorporated in the headstock unit.

Test for Carbon Tetrachloride Vapors

A simple test for determining the pr ence of dangerous carbon tetrachlor vapors in air was developed recently the research laboratory of American C tical Co., Southbridge, Mass. A coil copper wire is inserted into the base flame of an alcohol lamp and the co of the upper part of the flame noted.

In the presence of carbon tetrachlor in a concentration in air exceeding f parts per million, a slight but unmist able green color is imparted to the flar In the absence of carbon tetrachloride green color is seen. The test may sh green coloration if certain other unde able volatile chlorine compounds present.

New Chart Aids Operators, Engineers

Neutral gray recorder charts, recen introduced by Bailey Meter Co., Cle land, for metering and control equipme are easier for operators and supervis engineers to read because greater e phasis is given to the various colo records by the neutral background. S to be especially valuable on record installed where lighting is poor, the i provement in legibility is particularly parent with the dark-colored recor inks.

Receiving Bar Stock

(*Continued from Page* 124)

bundled when they clear truck bed.

(3) If bars are flush on truck bed, the following in unloading techniques are suggested: Bars extending over the tail of the truck can be lifted by hoist and 4 x 4-in. skids inserted under them. The hoist is then lowered, chains slid under the bars, and the load picked up. A fork truck can also be used to raise bars. If bars are in the truck, they will have to be lifted onto blocks of wood with pinch bars. This is a wasteful and difficult job, but also a necessary one.

(4) In the case of bundles jammed together with no space between for the chain, one bundle can be hoisted and blocks of wood placed on both sides. When this bundle is removed, the others are pried apart with pinch bars.

The steps outlined above are applicable to many types of loads, but not to all. Some trucks are so badly loaded that the steps outlined above cannot be put into practice. In such cases little can be done of a rectifying nature; instead, diverse and sometimes drastic emergency techniques such as those described below must be used.

Bars may be received flush on the floor of an open truck or trailer that removable sides. The bars cannot be on blocks because their ends cannot lifted by crane or fork truck and are too heavy to be lifted by hand this case, the sides of the trailer removed.

The fork truck is positioned as to the center of the bars as pos with the forks firmly against the of the trailer. Bars are then rolled the trailer onto the forks. If car exercised to control the number ro onto the forks, this operation is a one. However, two men are needed the trailer, and the driver of the truck must be an experienced man

Bundles of bars shipped in clo top motor trucks present a very c cult handling problem. Of course, can always be unloaded one at a tim hand; but this is a slow and costly op tion. A preferred procedure is show Fig. 1. Here, one end of a chai wrapped around the bundle; the o end is hooked around a solid post. T is driven out slowly while bars slide and drop to the ground. Driver of fork truck picks up the bundle from s which were placed previously under delivering truck.

Rollers Placed Under Bars

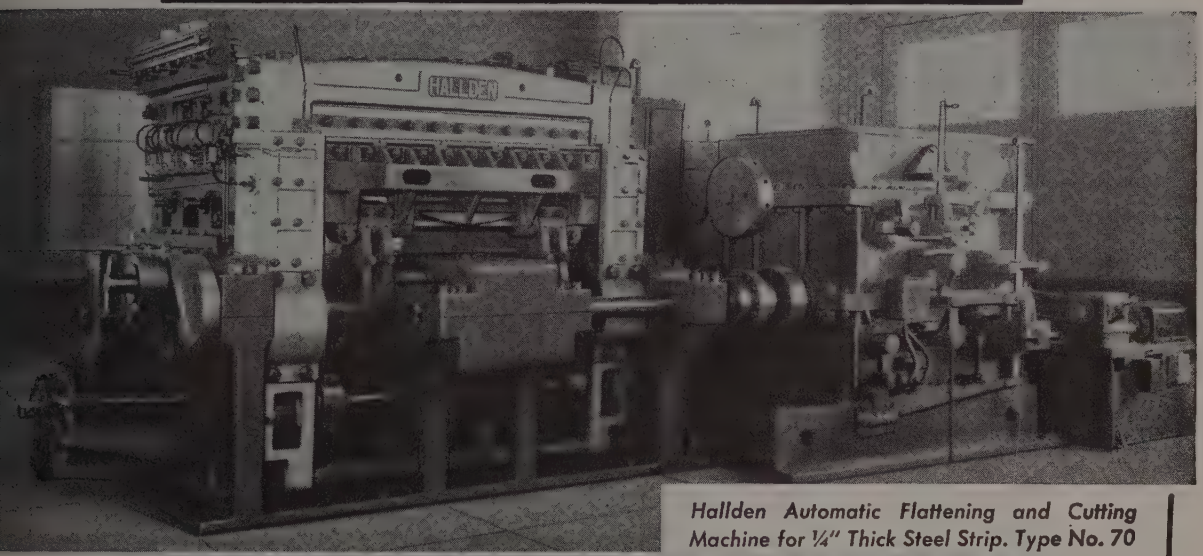
Large diameter bars in closed trucks are particularly hard to unl In solving this problem, rollers are pl under bars. Either the fork truck lifts end of the bar, or the bar is rolled two-by-fours onto rollers, and pushed out of the truck onto the f of the fork truck or onto the platf of the building. Rollers are admitted primitive means of moving bars, under certain conditions they are definite value. Rollers are also us where conditions are such that h bars cannot be handled by hoist or truck.

At the unloading point, the begin of good or bad material control is m If material is poorly received, all sequent control phases, stores, rec material control, production con planning, accounting, and so on all way down the line, will suffer as a sult.

Bad receiving procedure is a lu that few can afford and that none sh tolerate. Aside from the expenses ca by errors of this type, faulty recei costs a good deal in other ways. If example, receiving policies are such paper work is held up, discounts off by vendors are lost. The cost of lost counts is great enough to make the ference between profitable and mar operation.

Delays in issuing receiving slips a records, which in turn affect produc Production delays are often traceab

Automatic shears.... by HALLDEN



Hallden Automatic Flattening and Cutting Machine for ¼" Thick Steel Strip. Type No. 70

Here's a machine that takes the strip metal from coil, hot bed or trimmer, flattens it, cuts it accurately into pieces of pre-determined length, and piles the pieces neatly upon a conveyor, table or truck. It is a triumph of Hallden engineering.

Consisting of two units, a flattener and a flying shear, it is driven in combination and so timed that during the period of cutting off, the shear moves forward with the exact speed of the metal. The flying shear is a rocker type guillotine design, constructed of a special alloy welded steel. Shear knives are standard type. Each blade has four cutting edges; top and bottom blades are interchangeable, and both blades always move in a mutual plane.

The flattener consists of a 10-roll flattener with two pairs of feed rolls, each roll driven through a coupling. Flattening rolls are constructed of an alloy chrome steel, hardened and ground to a sclero-scope of 90. All rolls are easily removed for grinding.

The machine is designed to cut the metal lengths to an accuracy of 1 64 of an inch. Heavy and rugged, with a low center of gravity, it stands up under continuous service without any attention other than oiling. Simple, rugged and entirely automatic, it is very compact and requires little space.

THE HALLDEN MACHINE CO.

THOMASTON, CONNECTICUT

SALES REPRESENTATIVES
THE WEAN ENGINEERING COMPANY, INC., WARREN, OHIO.
W. H. A. ROBERTSON & CO., LTD., BEDFORD, ENGLAND.

bad receiving methods. Materials incor rectly identified, incorrectly weighed, i correctly measured—all such errors hav as their counterpart jobs held up need lessly because materials on hand are no recorded.

Bar stock, more than any other ma terial, is beset with a multitude of po sible receiving errors and mistakes. must be counted and weighed; it canno be identified readily by labels or sticke or by part numbers. The difficult proce of using specification numbers must b followed. Bar stock must be measure accurately.

The following procedure for receivi bar stock is suggested: Primary task correct measuring. It means more tha using a dime store caliper. Approxim tions and almost-right measurements a not good. Personnel should be w trained in proper use of calipers, micr meters, and other measuring instrument

Obtaining Length of Bars

Lengths of bars can be obtained easi with a minimum of ingenuity. If a tho sand ½-in. diameter bars are receive there is no reason for measuring each b individually. A rough estimate suffice Where three 6 in. diameter bars are r ceived, logic would require that they b measured. Bars between these two e tremes can be measured with steel tap or their lengths can be estimated by com paring them to objects of known lengt A number of odd length bars can b measured quickly by laying the bars o in a row with one end even. The fir bar can be measured with a steel tap and the lengths of the other bars est mated by their relationship to the leng of the first bar.

In weighing bars a few prelimina precautions will be invaluable: Che scales often; scales used for bar sto are subject to great shocks. Mark weig ratio of scale and removable weights t scale. Inspect weights to see that th are not chipped or broken. Paint weigh on tare. Tag chains, cables, ropes an slings, showing weights. Stencil weig on fork lift truck to permit weighin truck and bar stock without unloadin Indicate skid weights.

Since bars are sold by the pound, weigh incorrectly is to pay incorrectl Weights on receiving slips bear gre importance to the accuracy of stor records and stores' inventory balanc No matter how careful the stores depar ment may be in issuing materials an in keeping accurate records, all the efforts are doomed to failure if weigh on receiving slips are wrong.

Best way to identify a shipment metal is by the packing slip which lis all or some of the following items: Pu chase order number, vendor, size an type of material, weight of shipme

mber of bars, heat numbers, color inted on ends of bars, and other facts. e difficulty is the lack of uniformity packing slips. Another is that packing ps are not always received with shipnts of bar stock. It is difficult to at-h a packing slip. Slips are torn off, vered with grease, lost, marred, muti-ed.

There is no certainty that slips will be t with the material, and if they are, re is certainly no guarantee that they ll be legible when received. Some ndors mail the packing slip when the terial is shipped. If this is done, the p should be forwarded to the receiving partment immediately. A packing slip somebody's drawer is of little value.

In addition to the packing slip many ndors send out analysis reports either mail or with the shipment. The analysis report gives the heat numbers and emical composition of the material. he receiver should verify the specificaons for every bar of the shipment by ecking the heat numbers stamped on e bars against the heat numbers listed the sheets. The analysis report, an cellent means of insuring correct idenfication of materials, should be reested from vendors whenever possible.

Determining Identity of Material

Accompanying most shipments is a ight bill which is usually delivered by carrier. If all other paper work is king, the purchase order number and ndor's name listed on the freight bill serve as a guide in identifying the terial.

In addition to the above-mentioned ms of paper work, there are other ans of determining the identity of maials. Anything that gives the purchase der under which the material was pped and the vendor's name helps in ntifying the material. Tags, stamp and cil marks, colors on end of bars are es that aid in identifying materials. ue" seems an inappropriate term, yet te often much detective work is red before a shipment can be identi-

n actual practice one or more paperk forms may accompany shipments. these forms should be used in check- the shipment. The packing slip will ty the purchase order number, quantcounted, weight, size scaled, and idenation of the material being received. weight and purchase order number the freight bill should be checked. t numbers on analysis reports should ompared with heat numbers on bars. t on ends of bars should be noted st packing slips. If all these steps are wed and all possible checks made, ct identity of materials received will uaranteed.

ie purchase order should serve as the

final check against the accuracy of b receiver and shipper. If the purch order is used as a direct check medium, errors on the part of the ship will be overlooked and errors in receiv will be encouraged.

Many companies adopt the policy omitting weights on receiving s stores copies of the purchase order eliminate faked weights. This act makes a game of receiving bar st wherein the receiver is not permitted "peek" and the office "knows but wo tell." Such a practice is of limited val If those receiving bar stock wish to f weights, they can do so without know the weights given on the purchase ord If cheating occurs, the ostrich-like act of deleting weights is of little practi value.

Checking Upon Receipt

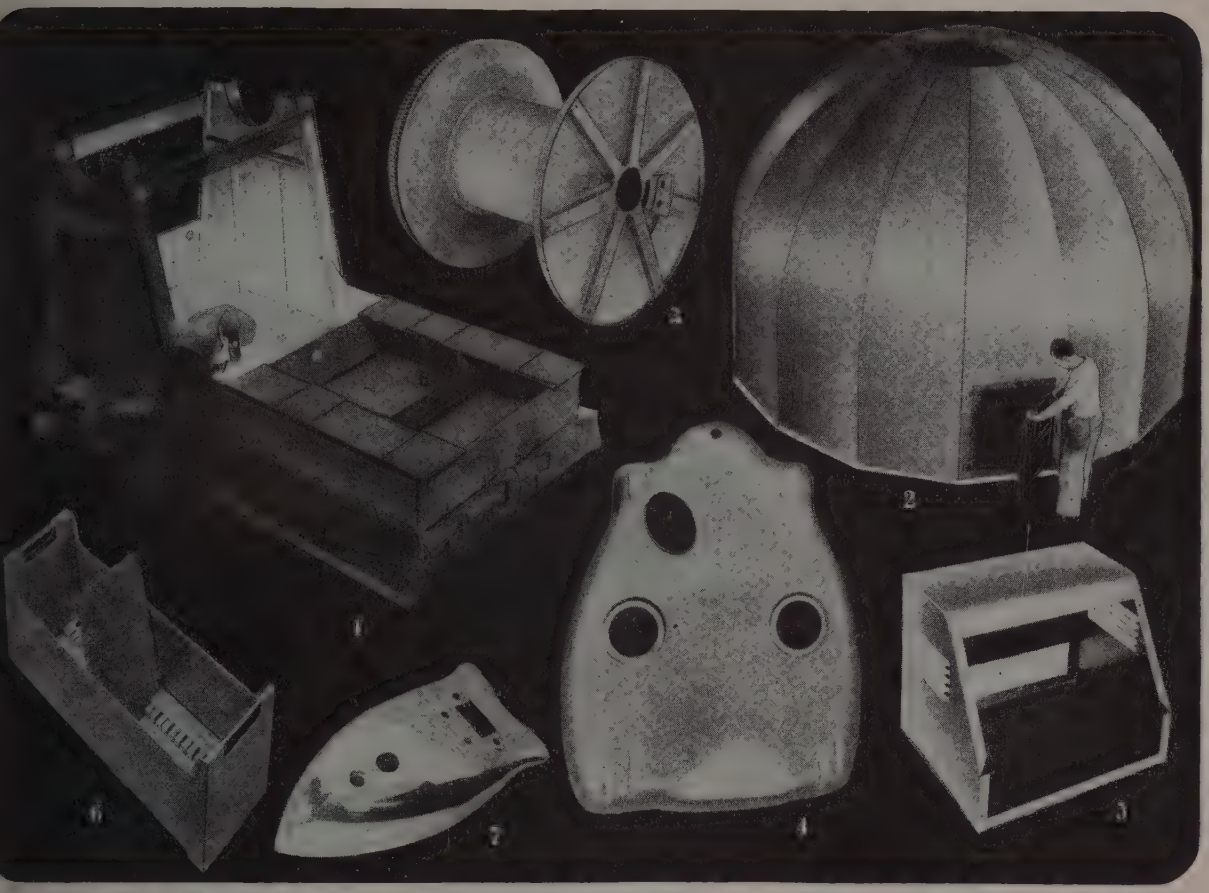
If discrepancies between informat on the purchase order and informat gathered during receiving are discover the best time to do something about is during receiving. Checking and checking can be done best while material in question is still on the ceiving room floor. The more time t elapses between receiving and checki the costlier, more difficult, and accurate is the checking.

As shown previously, packing slips a other paper work that accompany stock shipments are uncertain and of inadequate sources of information. Th are also poor media for transmitting formation from the person who recei the shipment to the receiving clerk w writes the receiving slip. Even if pa ing slips were always available, writ a receiving slip from such a source information leads to errors.

Packing slips are uniform neither physical appearance nor in sequence information, both factors varying w vendors. The greatest error in transcr ing information arises from the seque of information in the source mate being different from that on the being written. If a recording clerk ha get his information first from the top the sheet and then from the bottom then from the middle, he will omit s facts and transcribe others incorrec The ideal situation is one wherein information can be transcribed seque ally from one record to another elimi ing the possibility of errors.

This applies to all sorts of slips to all manner of posting but especiall receiving slips. If the receiving cler to write up the slip correctly, he sh copy his information from a clean, derly-arranged form. The paper that accompanies the material is ne clean nor orderly, hence, there is a for a receiving check list as show Fig. 2. The check list is filled out b

7 UNUSUAL METAL WORKING JOBS



pecialized Work—ranging from 14,000 lbs. to a few ounces—for 6 exacting customers

Brandt's ability to solve out-of-the-ordinary metal working problems in an extreme range of sizes and metals is illustrated by the 7 products shown above. The aluminum electric iron stampings were mass-produced to close specifications on a rush order. In contrast, the 14,000 pound precision Weldments (1), were tailor made to exacting Naval specifications. The Protective Housings for Naval Guns (2) are huge 15 ft. diameter units of 16 gauge steel, produced on assembly line basis, and made in their entirety by Brandt.

The other products shown were made for Specialized Aircraft, Electronic, Marine and Office equipment. Widely different in size, metals, specifications and quantity, the production of each of these orders demanded Specialized Facilities.

1. 14000 lb. Steel Weldments
2. Protective Naval Gun Housings
3. Intricate Steel Weldments
4. Aluminum Aircraft Fuel Tanks
5. Steel Radio Jackets
6. Steel Office Files
7. Aluminum Iron Housings

ALL UNDER ONE ROOF

BRANDT
BALTIMORE

CHARLES T. BRANDT, INC., 1700 RIDGELY ST., BALTIMORE-30, MD.

Precision METAL CRAFTSMEN SINCE 1890 ★ ★ ★ ★

person who receives the material.

Sequence of information on the check list should be co-ordinated with the sequence of information on the receiving slip. All items that do not appear on the receiving slip, but which are of value, are listed separately or clearly distinguished from regular information. Aside from cutting the number of errors on receiving slips, the check list is of value because it insures that all needed information will be included. Facts to be presented on individual check lists are matters of individual companies.

In inspecting material, physical examination of bars is of limited value. The most that any inspector can do is look at the bars, scale them, and put his initials on the receiving slip. Mere examination of bar stock tells nothing of the condition, composition, or hardness of the metal.

If there is a need for inspecting bar stock, it should be done in the shop's laboratory where physical and chemical tests are possible. Such inspection should take place after the material is received and receiving slips are made out. A copy of the slip plus sample bars can be sent to the laboratory for analysis and inspection.

Circuit Breakers for 3½ Million Kva Developed

With expansion in size of power systems and more interconnections made between systems, the interrupting duty on high voltage power circuit breakers has come to exceed the ratings available. With this in mind, larger grids for oil breakers and interrupters for air breakers have been developed in the Westinghouse Electric Co. high power laboratory at East Pittsburgh, Pa. The new Multiflow de-ion grid, developed by the company can interrupt 3,500,000 kva and it is foreseen that a grid will be tested at 5,000,000 kva or better, that not being the final limit.

Extinction is accomplished by forcing several jets of oil under pressure across the lengthening arc, resulting in faster arc interruption and a much smaller gas bubble. Because of the latter, Westinghouse states that it was able to reduce the physical size of circuit breaker tanks by as much as 50 per cent with consequent savings in steel and insulating oil.

Power system changes also required that interrupting time be speeded up. Changes in design have made available 5-cycle breakers in the higher voltage classes. Multiflow grids reportedly can be used for fast reclosing times of 20 cycles or better.

The desire for faster reclosing breakers has led to the development of the pneumatically-operated mechanisms which close and reclose oil circuit breakers hitherto unheard of speeds. In the ra of 15 to 34.5 kv, the compressed breaker has largely superseded o types for indoor service. Advant noted for this type are: Superior in rupting performance; oil-fire hazard eliminated and oil handling is unne sary.

The future use of compressed breakers for high voltage outdoor appl tions is still doubtful. Although it i their favor to eliminate oil, other haz crop up. All designs considered thus have limitations in the manufactu cost, because it is difficult to install rent transformers and potential dev in this breaker as easily as with a d tank breaker. Other problems are m anism complication, insulation and we er proofing, and also the matter of sp limitations.

According to Westinghouse, de work is underway toward the produc of apparatus for voltages above 287 recent studies having proved that paratus with a voltage rating of 40 is feasible without fundamental cha in interrupter design.

Steel Piping Specification Compiled by ASTM

Specifications covering steel piping tubing as well as other materials w are used in piping installations such castings, forgings, bolting materials nuts, are included in the December compilations of Specifications for Piping Materials issued by American ciety for Testing Materials.

Book includes 14 specifications various types of pipe ranging from or ary carbon pipe to those of high all steels. Thirteen "specs" cover va types of boiler, superheater and mi laneous tubes, including four stand on stainless tubing. Both still tubes heat exchanger and condenser tubes covered in three sections each, while ings used in pipe installations are cov in five. Forgings and welding fittings covered in four specifications and car and alloy steel bolting by three stand in this book.

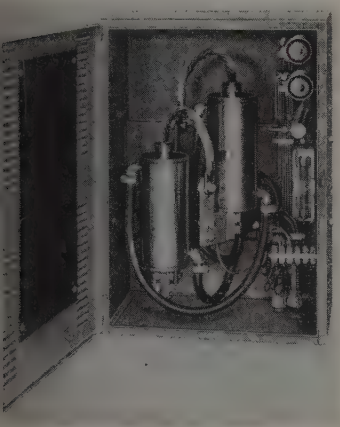
—o—

"Design for Arc Welded Structure the title of a new sound color motion ture sponsored by Lincoln Electric Cleveland. The 16 mm presentation views fundamentals and provides ideas on welded design. Besides gi specific examples to show how va structural shapes can be combined improve design and cut costs, exten use is made of color animation to pro a clear, interesting study of tension m bers, beams and compression membe

Additional information on the new products and equipment described on this and succeeding pages may be obtained, without obligation, by checking appropriate numbers on the cards following page 186

Welded Contactor

Resistance welding jobs involving high ed operation or heavy primary currents short time duration, are handled by ignition-tube equipped electronic tactors announced by Industrial Con- ler Division of Square D Co., 4041 rth Richards street, Milwaukee 12. sign of the new class 8990 contactors

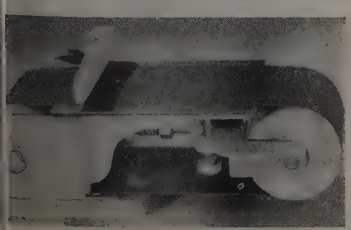


vides increased wiring space with ver connections made near the center the enclosure.

All control elements are grouped at the ht side away from tubes and cables, l out of the path of any dripping m water condensation on tubes and es. Cabinets are heavy sheet steel h ventilating louvres in the door and in holes in the bottom. Flat door struction permits close ganging of tactors.

Belt Sander

Woods Engineering Co., Norwalk, n., is manufacturing a new model belt sander and tool grinder for use wood, metals, plastics, glass and rub-

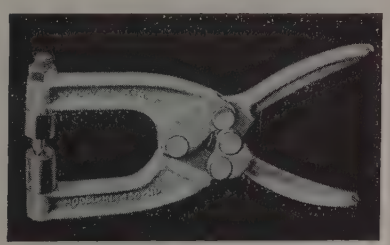


It also is suitable for tool-grinding, urring and finishing of small parts. ander is adjustable for either horizon- or vertical operation on a platen work t of 5 x 8½-in. Standard abrasive size is 4 x 36 in.

ulleys measure 4 x 4½ in. and are of hined aluminum with ball-bearings, d to 5000 rpm. Sander has simple thumbscrew control for belt tracking and tension. Work dam is adjustable to any angle while work platen is reversible and can be used on either face.

3. Hole Locator

By means of a new hole locator announced by Knu-Vise Inc., Detroit, several sheets of metal may be quickly aligned for positioning prior to riveting, spot welding or drilling. Looking like ordinary pliers and operating as simply, the de-



vice, cataloged as KL-450-HL, has a toggle-action that automatically locks the work, leaving operator's hands free to perform other duties.

Pressure spindle of the locator is adjusted to admit work up to 1¼-in. thick. The locator is 8 in. long and 3 in. wide. It is capable of holding a maximum of 500 lb. It weighs only 22 oz.

4. Die Casting Machine

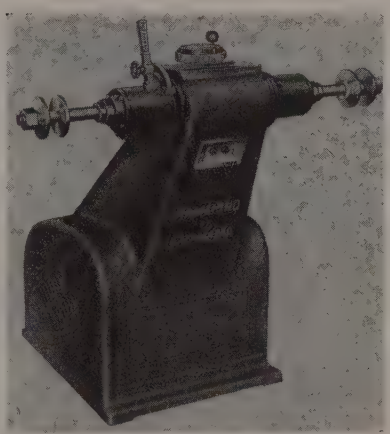
H. L. Harvill Mfg. Co., Corona, Calif., is manufacturing a die casting machine, designated as model HDlOS, of high speed cold chamber injection type with center gate for casting aluminum, magnesium and brass alloys. Provision also is made for conversion to hot chamber operation for casting zinc, lead and tin base alloys.

Machine is basically a small, light weight cold chamber type capable of casting up to 2.6 lb of aluminum, or a proportionate volume of other base metal alloys, at a maximum reduction rate of 500 casting cycles per hour. Specifications provide for normal die dimensions of 13 1/2-in. vertical by 23 in. horizontal, with 10 in. between dies in the open position and a maximum thickness of dies when closed of 19 in. The die platen size is 19 x 23 in. overall.

Injection piston has a diameter of 4 in. with a stroke of 13 in. Operating under 1000 psi hydraulic pressure, a pressure of 5000 psi is applied on the molten metal injected into the die cavity.

5. Polishing Lathe

Speed changes are made by a hand dialing mechanism on the new model VROL polishing and buffing lathe introduced by Hammond Machinery



Builders Inc., 1600 Douglas avenue, Kalamazoo 54, Mich. In changing speeds, the lathe's 3-hp motor is raised and lowered by the mechanism. This causes

a movable disk on a variable-speed motor pulley to slide laterally, increasing or decreasing its pitch diameter. Belt tension is automatically controlled by the motor pulley.

Motor of the lathe, mounted in the base, has a speed range of 1500 to 3000 rpm. The machine's two-spindles also overhang 8 in. to permit handling of bulky parts. Other lathe features include a combination brake and switch with spindle lock.

6. Steel Caster

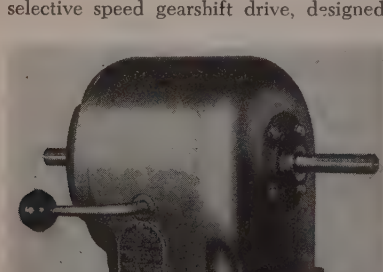
A new caster, called the Scout, especially designed for light and medium duty service, is announced by Rapids-Standard Co. Inc., Grand Rapids, Mich. It is for use on all types of light trucks, dollies and many types of portable equipment.

Top plate and swivel yoke of the caster are formed from ⅛-in. steel. A

double ball race assembly provides free-swiveling action under rated load capacities and in a wide range of operating conditions and applications. It is manufactured in swivel and rigid models and may be equipped with either hard or soft tread molded-rubber 3½ in. wheels. Top plate size is 2½ in. by 3⅝-in. with bolt holes for ¼-in. bolts. Overall height of the new caster is 4-11/16-in. Equipped with either of two different wheels, the caster has a capacity load rating varying from 125 to 250 lb.

7. Selective Speed Drive

Lima Electric Motor Co., 3001 Findlay road, Lima, O., announces a type RD selective speed gearshift drive, designed

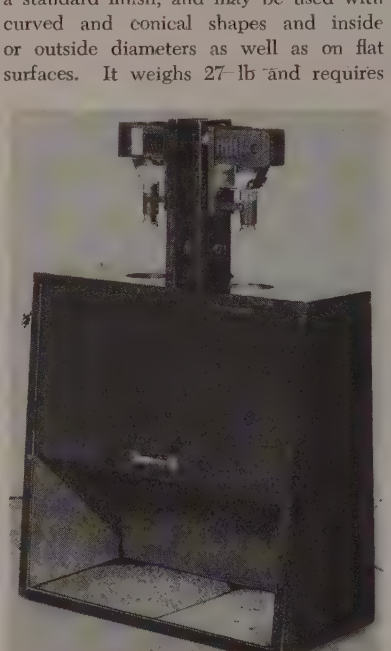


to motorize machinery requiring selective speeds. It can be used with any standard motor of 1/4 to 1-hp rating. Gear ratios are 1 to 1, 1.33 to 1, 2 to 1 and 4 to 1. The ratios are such that speed changes occur in even steps.

The drive operates in either direction. Gears and bearings, lubricated by a permanent oil bath, assure long trouble-free service.

8. Inspection Instrument

Control of machined finishes is possible with the new portable dual projection unit, model D-30, being introduced by Faxfilm Co., Cleveland. This instrument provides a quick, accurate comparison of a production finish with a standard finish, and may be used with curved and conical shapes and inside or outside diameters as well as on flat surfaces. It weighs 27 lb and requires



only 2 sq ft of bench space. Setup at inspection point takes only 2 min.

Faxfilm is the process by which a plastic replica of a surface is made and projected to produce a three-dimensional image of the surface at from 10 to 200 diameter magnification. In this unit, films of a standard finish and of a production finish are projected by two microprojectors mounted at the top of the case, the images appearing side by side at 30 diameter magnification on a screen at the base of the case.

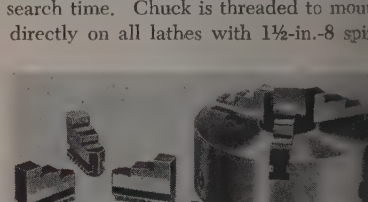
Openings on either side of the case permit the operator to view the images, measure them or point to specific areas.

9. Magnetic Relays

Bulletin 106 midget magnetic relays built by Ward Leonard Electric Co., Mount Vernon, N. Y., are designed for application in industrial, electronic and special control circuit where remote or automatic operation is required. Suitable for alternating or direct current on standard voltages and frequencies up to 125 v, relays are available with single or doub pole, and single or double-throw silv contacts. Single break contact ratin for standard relays are 4 amp, 125 ac, 60 cycles on noninductive loads. The are of the open type mounted on a molde phenolic insulating base, and where e closures are required, bakelite or ste covers etc., may be supplied. The ma netic relays are available for 2 or 3-wi instrument control.

10. Lathe Chuck

Falls Products Inc., 134 North Geu Street, Genoa, Ill., announces 5 in. u versal lathe chuck that has three harden alloy pinions to reduce wear and elimina search time. Chuck is threaded to mou directly on all lathes with 1½-in.-8 spi

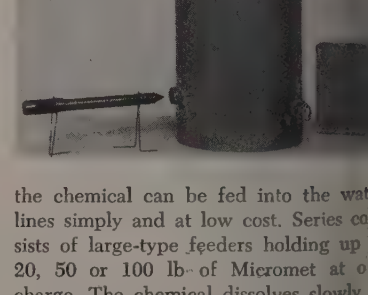


dle thread, but also can be adapt mounted to others.

Two sets of interchangeable jaws, f internal and external grip are furnish with the chuck. A 6 in. independe 4-jaw chuck for 1½-8 spindle, thre mounting is also available.

11. Micromet Feeders

For any establishment having corrosi or scale water troubles in hot water cooling water systems, Calgon, Inc., 3 Fourth avenue, Pittsburgh, has develop a series of Micromet feeders by whi



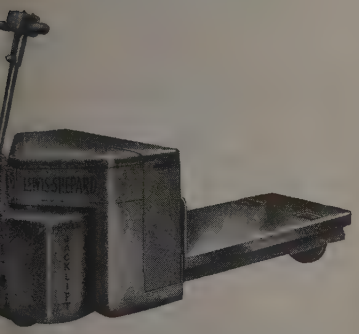
the chemical can be fed into the wa lines simply and at low cost. Series co sists of large-type feeders holding up 20, 50 or 100 lb of Micromet at o charge. The chemical dissolves slowly the rate of 25 per cent per month.

Amount of chemical required, and t size of feeder, depend on the type water trouble encountered and t amount of water to be treated. For c rosion the 50-pound feeder, for

ple, will handle up to 150,000 gallons water per month. For hard waters pro- ing lime scale it will handle up to ,000 gallons.

. Power Jacklift

Vertical handle operation and electric ke, are featured in the power jack- built in both platform and pallet dels by Lewis-Shepard Products Inc., Walnut street, Watertown 72, Mass. is an electrically operated hand lift



k operated by an electric button lo- d in the handle head. Every opera- can be performed with handle ver- l. Release of handle in any position ses electric brake to stop the truck antaneously. The handle also has a ring arc of 200 degrees. Trucks are ilable in several lengths. Platform k in both wide and narrow models.

. Bench Grinder

New 6 in. heavy duty bench grinder tool sharpening, wire brushing and ing has been developed by Black Decker Mfg. Co., 600 East Pennsyl- ia avenue, Towson, Md. Its die-cast

housing improves working clearance decreases weight. Strong steel wheel rds and covers meet safety require- ts. They also are wide enough to mmodate a standard 3-section wire el brush without any change in the d.

itting around the grinding wheel for roved support in tool sharpening are stable U-shaped tool rests. The 2- push button switch is recessed in housing to prevent accidental con- tact. Grinder can be bolted to a bench or mounted on a pedestal. Equipment includes two grinding wheels; medium grade for rough fast work, fine grade for finish grinding and tool sharpening.

14. Hand Truck

New general service hand truck built to handle heavy loads is announced by Thermold Co., Trenton, N. J. Truck is 53 in. high, 18 in. wide with 9 in. rubber tired, ball bearing wheels. It

is made of aluminum alloy castings and with a 7 in. steel nose.

Ball bearings have a built-in grease seal that prevents dust or dirt from reaching the bearing and also prevents grease leakage from a large built-in grease reservoir.

15. Cast Iron Pumps

Capable of operating in any position, the bronze fitted, cast iron Pedrifugal pumps developed by Allis-Chalmers Mfg. Co., Milwaukee, are suitable for machine

FOR MORE INFORMATION
on products and equipment described in this section, fill in a card following page 186.

tool applications, large diesels and air conditioning equipment. They are made in three principal sizes—1 x 1 in., 2 x 2 in., and 3 x 3 in. Capacities are from 10 to 500 gpm at heads from 10 to 100 feet, with power requirements from ¼ to 15 hp.

Pumps are designed for use with Texrope V-belt drives, giving an infinite range of capacities regulated by size of sheaves and power supplied. All the pumps are fitted with impellers of maximum diameter, and variations in capacity are provided by changes in speed through sheaves of larger or smaller diameter.

Construction features embody only one fit (between the pedestal and the casting), open impeller keyed to the shaft and fitted with lock nut, mechanical seal, and two bearings of ample size for either direct or belt drive.

16. Stock Bin Light

The Stocklite, manufactured by Goodrich Electric Co., 4600 Belle Plaine avenue, Chicago 41, is for illuminating shelves and bins in narrow stockroom aisles. Its novel appearance is due to its design which provides eight different

reflecting surfaces to insure distribution of light where it is most needed.

Curved V-shaped reflectors of the unit at either end eliminate glare in the aisles by shielding the light source from the field of vision in addition to reflecting light into the bin interiors.

Finished in permanent porcelain enamel inside and out, the fixture is easily cleaned. For installation and servicing, it is furnished with a separable hood which permits attaching or detaching without the use of tools, or without disturbing the wiring.

17. Outdoor Arc Welder

Twin-unit outdoor alternating-current arc welder in a single enclosure is announced by Electric Welding Division,

General Electric Co., Schenectady, N. Y. Each of two circuits of the welder is used simultaneously and independently

with electrodes up to 3/16-in. in diameter, or combined into one circuit for heavy welding with ⅜-in. electrodes. Units have a current range of 90 to 270 amp, when used singly, and 180 to 540 amp in parallel.

Both are equipped with control which reduces open circuit voltage to approximately 30 v when the machine is not welding.

18. Pressure Switch

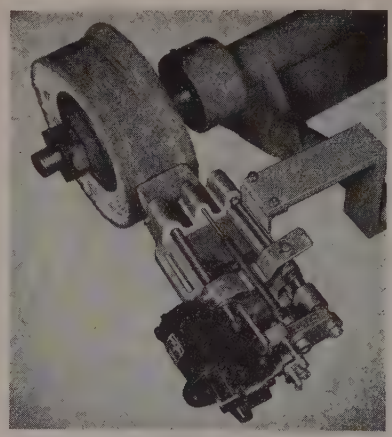
Aerotec Co., White Plains, N. Y., announces a new line of pressure switches for control of automatic gas, oil or coal-fired steam boilers. The line also is

applicable to air and refrigeration compressors and pumps of industrial processing jobs where accurate control is essential.

Pressure range on the H-701, first in this series, is from 1 to 10 lb with a differential of 1 to 5 lb. Also available are ranges up to 300 lb and differentials of 1 to 80 lb, with microswitch contact arrangements of normally off and normally on. The H-700 handles any liquid or gas not injurious to brass. Control is set by fingertip adjustments from outside the cover, and calibrated scales for range and differential are easily read through a window in the cover.

19. Expanding Mandrel

Special features can be incorporated in the standard mandrel line made by Erickson Tools Division of Erickson Steel Co., 2309 Hamilton avenue, Cleveland 14. Locating or driving pins may be added which are interchangeable and may be of various lengths. Hand wheels can be furnished, as can spline, hex, square or step type sleeves. Close tolerances can be held on parts to be machined. These custom-built mandrels retain standard line quality, particularly accuracy of 0.0005-in., vise-grip on interior surfaces throughout expansion range of 1/32-in. and fact that many sleeve sizes in increments of 1/32-in. can be purchased for each model of shank.

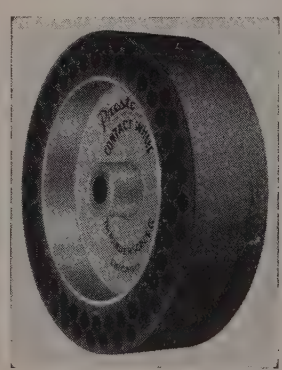


20. Compound Applicator

Buffing compound applicator that has an intermittent feed control operating at the rate of 14 strokes per minute, affording a feed ranging from 0.0015 to 0.015-in. per stroke, is announced by George L. Nankervis Co., 5442 Second boulevard, Detroit 2. It can be mounted on any right or left-hand automatic machine and can be adapted to everything from the simple to complex multiple-stage buffing operations. Applicator is driven by a totally enclosed geared head motor of 110, 220 or 440 v. A compound applicator clamp will accommodate any length stick of compound up to 4 in. Total weight is 20 lb.

21. Contact Wheel

Cool running qualities, which permit use on semiautomatic polishing lathes, is feature of a contact wheel announced by Manderscheid Co., 810 Fulton Street, Chicago 7. Five plies of cool-running



rayon cord make the wheels suitable for semiautomatics by keeping them cool and holding their shape. Holes through the rubber give additional cooling beneath the surface and produce the action which snaps the abrasive belt as it leaves the work, beating it clean with 72 hammer-blows per revolution of the 14-in. wheel.

Wheels are furnished in 9 and 14 in. diameters with 2, 3, and 4-in. face. Diameters are uniform so that two or m wheels can be used together to produ any desired width.

22. CUTTING OIL

Said to have all-water miscibility, new soluble cutting oil, developed Gulf Oil Corp., Pittsburgh, provides hi lubricating value, extreme stability, ple ant odor and nonfoaming and rust p ventive characteristics. It is also s to improve production by increasing t life and reducing down time for t changes.

23. CEMENT AND THINNER

A new grain cement and thinner, s to be an improved adhesive for poli ing wheels, is announced by Hanson-V Winkle-Munning Co., Matawan, N. Used in the field successfully for a nu ber of months, the material is report to overcome deficiencies of organic glu

24. ARC WELDING ELECTRODE

Among the features of the new t automatic arc welding electrode int duced by Reid-Avery Co., Baltimore, the elimination of slitting shielded coatings to obtain contact with wire a doing away with wrapping of shield materials on wire during operation. Cal Raco composite type A, this electr also does away with the recovering unused melt.

Entire manufacturing process, drawing of the wire, grooving electr to permit spiralling of six contact wi and the coating, is accomplished in continuous operation, the company sta

25. ARC WELDING ELECTRODE

Five knurled type wires and five fl impregnated tapes comprise the line automatic arc welding electrodes recen marketed by Wilson Welder & Me Co. Inc., New York. Designed for position operation, applications of ele rodes are many and varied, the compa states, ranging from thin gage sheet me forms to axle housings, boilers and que tubes. They are available in seve diameters and alloy analyses. Designa as Una, the automatic wires may be u separately or in conjunction with tapes.

r Shortage Cuts Steel pments to Consumers

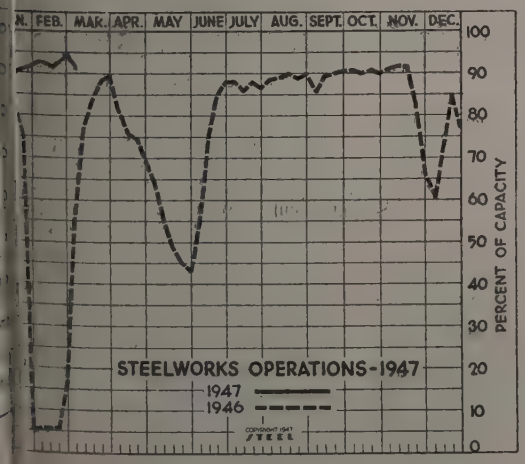
Supply scarcities intensified by transport difficul-ies. Steel and metalworking shops affected. En-arged railroad car program presents allocation problem. Scrap seen nearing top

UTE freight car shortages and adverse weather are g havoc with steel producers' efforts to dent the rder accumulations on their books. Shipments into ut of steel and metalworking plants have been to a walk by lack of cars, while the heavy snowfall large section of the nation has disrupted traffic gen- both rail and truck. Metalworking shop shutdowns orted due to lack of storage space to accommodate nal piling of finished goods delayed in shipment.

ddition, shortages of industrial gas have forced cur-nt of steelmaking and metalworking operations.

slowdown in shipments is accentuating the tight upply situation. Sheet producers, for example, re-ie transportation bottleneck not only is hampering ies to consumers, but it is restricting production by g receipt of essential raw materials, such as scrap. companies are able to ship tonnage promptly, and, hile, orders continue to pour in on the mills with d showing no signs of a let-up. Sheet require-are expected to out-run production the remainder year, possibly longer.

e of freight car buying features current market de-ents. At least 15,400 units were placed in Feb-argest since December, 1944. This trend in order-ects the concerted efforts to get the projected car-g program going as soon as possible. In support program, steel producers last week indicated they ndeavor to supply steel for monthly production of cars, instead of the 7000 recently agreed upon. posed change, it is estimated, will require 235,000 tons of steel per month, instead of the 165,000 tons originally scheduled.



DISTRICT STEEL RATES

Percentage of Ingot Capacity Engaged in Leading Districts

	Week Ended March 1	Change	Same Week 1946	Same Week 1945
Pittsburgh	94.5	— 5.5	71.5	89.5
Chicago	92	None	61	98.5
Eastern Pa.	88	— 1	36	90
Youngstown	89	None	60	92
Wheeling	93.5	+ 6	86	98.5
Cleveland	90.5	— 2.5	77	91
Buffalo	90.5	None	44	90.5
Birmingham	99	None	57	95
New England	92	None	75	90
Cincinnati	87	— 9	70	87
St. Louis	74.5	+ 5.5	54	80
Detroit	87	— 5	64	85
Estimated national rate	92.5	— 2	56	96

Based on weekly steelmaking capacity of 1,762,381 net tons for 1946; 1,831,636 tons for 1945; 1,791,287 tons for 1944.

Upping of car steel requirements will be at the expense of other consumers. This new burden added to that carried by the mills in the form of earmarked steel for housing and exports is certain to intensify tight steel supply conditions.

Confused situation continues in scrap. Prices still tend upward though no change in heavy melting grades is reported at Pittsburgh or Chicago. Material is flowing more freely. Scramble for metal goes on, however, with tie-in sales, special deals and cross-hauling still very much in evidence. While scrap continues tight, at the same time a note of caution is developing with production scrap coming from manufacturing plants in increased volume and a heavier flow of country and general scrap in prospect as the weather moderates. Some trade observers, in fact, think the market is at, or at least is close to, the top and predict more normal trading within 60 days.

Steelmaking operations declined two points last week to 92.5 per cent, reflecting raw material shipment interruptions and gas shortages. The ingot rate was off 5½ points at Pittsburgh to 94.5 per cent, 9 points at Cincinnati to 89 per cent, 5 points at Detroit to 87 per cent, 2½ points at Cleveland to 90.5 per cent, and 1 point to 88 per cent in eastern Pennsylvania. Advances were reported at Wheeling, up 6 points to 93.5 per cent, and at St. Louis, up 5½ points to 74.5 per cent. Elsewhere rates held unchanged.

Steel prices were steady last week. Talk continued to be heard of a likely early increase on pig iron. Carnegie-Illinois Steel Corp. again revised its extra card on hot-rolled sheets and strip from the list issued last December. An advance on heavy melting steel scrap in eastern Pennsylvania lifted STEEL's composite price on steelmaking scrap 50 cents to $34.33. Averages held unchanged on finished steel at $69.73, on semifinished steel at $52.10, and on steelmaking pig iron at $29.56.

COMPOSITE MARKET AVERAGES

	Mar. 1	Feb. 22	Feb. 15	One Month Ago Feb., 1947	Three Months Ago Dec., 1946	One Year Ago Mar., 1946	Five Years Ag Mar., 194
Finished Steel	$69.73	$69.73	$69.73	$69.73	$64.75	$63.54	$56.73
Semifinished Steel	52.10	52.10	52.10	52.10	41.10	40.60	36.00
Steelmaking Pig Iron	29.56	29.56	29.56	29.56	29.10	25.13	23.00
Steelmaking Scrap	34.33	33.83	33.75	32.73	27.69	19.17	19.17

Finished Steel Composite:—Average of industry-wide prices on sheets, strips, bars, plates, shapes, wire, nails, tin plate, standard and lia
Semifinished Steel Composite:—Average of industry-wide prices on billets, slabs, sheet bars, skelp and wire rods. Steelmaking Pig Iron Compo
Average of basic pig iron prices at Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Neville Island, Granite City and Youngstown. Steelwork
Composite:—Average of No. 1 heavy melting steel prices at Pittsburgh, Chicago and eastern Pennsylvania. Finished steel, net tons; others, gro

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished material (except tin plate) and wire rods, cents per lb; coke, dollars per net ton; others, dollars per gross ton.

Finished Material

	Mar. 1, 1947	Feb., 1947	Dec., 1946	Mar., 1946
Steel bars, Pittsburgh	2.60c	2.60c	2.55c	2.50c
Steel bars, Philadelphia	2.98	2.98	2.91	2.82
Steel bars, Chicago	2.60	2.60	2.55	2.50
Shapes, Pittsburgh	2.50	2.50	2.35	2.35
Shapes, Philadelphia	2.64	2.64	2.48	2.465
Shapes, Chicago	2.50	2.50	2.35	2.35
Plates, Pittsburgh	2.65	2.65	2.50	2.50
Shapes, Philadelphia	2.64	2.64	2.48	2.465
Plates, Chicago	2.65	2.65	2.50	2.50
Sheets, hot-rolled, Pittsburgh	2.50	2.50	2.48	2.425
Sheets, cold-rolled, Pittsburgh	3.20	3.20	3.19	3.275
Sheets, No. 10 galv., Pittsburgh	3.55	3.55	†3.675	†4.05
Sheets, hot-rolled, Gary	2.50	2.50	2.481	2.425
Sheets, cold-rolled, Gary	3.20	3.20	3.218	3.275
Sheets, No. 10 galv., Gary	3.55	3.55	†3.675	†4.05
Hot-rolled strip, Pittsburgh	2.50	2.50	2.462	2.35
Cold-rolled strip, Pittsburgh	3.20	3.20	3.162	3.05
Bright basic, bess. wire, Pittsburgh	3.425	3.425	3.05	3.05
Wire nails, Pittsburgh	4.125	4.125	3.75	3.25
Tin plate, per base box, Pittsburgh	$5.75	$5.75	*$5.25	*$5.25

* Nominal. † Base changed in December to 10 gage.

Semifinished Material

Sheet bars, Pittsburgh, Chicago	$50.00	$50.00	$38.00	$38.00
Slabs, Pittsburgh, Chicago	42.00	42.00	39.00	39.00
Rerolling billets, Pittsburgh	42.00	42.00	39.00	39.00
Wire rods ¼ to $\frac{5}{32}$-inch, Pitts.	2.675c	2.675c	‡2.425c	‡2.30c

‡ Base, No. 5 to $\frac{5}{32}$-in.

Pig Iron

	Mar. 1, 1947	Feb., 1947	Dec., 1946
Bessemer, del. Pittsburgh	$31.83	$31.83	$31.77
Basic, Valley	30.00	30.00	29.50
Basic, eastern del. Philadelphia	32.01	32.01	31.93
No. 2 fdry., del. Pgh. N. & S. sides	31.33	31.33	31.27
No. 2 fdry., del Philadelphia	32.51	32.51	32.43
No. 2 foundry, Chicago	30.50	30.50	30.00
Southern No. 2 Birmingham	26.88	26.88	26.88
Southern No. 2, del. Cincinnati	31.75	31.75	30.94
Malleable, Valley	30.50	30.50	30.00
Malleable, Chicago	30.50	30.50	30.00
Charcoal, low phos., fob Lyles, Tenn.	37.50	37.50	37.50
Gray forge, del. McKees Rocks, Pa.	30.66	30.66	30.61
Ferromanganese, fob cars, Pittsburgh	140.25	140.25	140.00

Scrap

Heavy melting steel, No. 1, Pittsburgh	$35.00	$33.75	$28.50
Heavy melt. steel, No. 2, E. Pa.	33.75	33.25	27.38
Heavy melting steel, Chicago	32.50	31.25	27.19
Rails for rolling, Chicago	38.50	38.50	31.00
No. 1 cast, Chicago	42.50	42.50	36.90

Coke

Connellsville, furnace ovens	$8.875	$8.875	$8.75
Connellsville, foundry ovens	10.375	9.875	9.50
Chicago, by-product fdry., del.	16.10	16.10	15.288

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Finished steel quoted in cents per pound and semifinished in dollars per gross ton, except as otherwise noted. Delivered prices do not inclu
per cent federal tax on freight.

Semifinished Steel

Carbon Steel Ingots: Rerolling quality, standard analysis, price negotiated, fob mill. Forging quality, $40, Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown.

Alloy Steel Ingots: Pittsburgh, Buffalo, Bethlehem, Canton, Massillon, Coatesville, uncrop, $52.

Rerolling Billets, Blooms, Slabs: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Sparrows Point, Birmingham, Youngstown, $42; Portsmouth Steel Corp., $55-$60, Portsmouth, O. Detroit, del., $45; eastern Mich., $46.

Forging Quality Blooms, Slabs, Billets: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Birmingham, Youngstown, $50; Detroit, del., $53; eastern Mich., $54.

Alloy Billets, Slabs, Blooms: Pittsburgh, Chicago, Buffalo, Bethlehem, Canton, Massillon, $61; del. Detroit $64; eastern Mich., $65.

Sheet Bars: Pittsburgh, Chicago, Cleveland, Buffalo, Canton, Sparrows Point, Youngstown, $50; Portsmouth Steel Corp., $66, Portsmouth, O.

Skelp: Pittsburgh, Sparrows Point, Youngstown, Coatesville, lb 2.35c.

Wire Rods: Pittsburgh, Chicago, Cleveland, Birmingham, $\frac{7}{32}$ to ¼-in., inclusive, $2.55-$2.80 per 100 lb. Galveston base, $2.65. Worcester, add $0.10. San Francisco (base, del.), $3.27.

Bars

Hot-Rolled Carbon Bars and Bar-Size Shapes under 3-in.: Pittsburgh, Youngstown, Chicago, Gary, Cleveland, Buffalo, Birmingham, Duluth, base, 20 tons one size, 2.60c; Detroit, del., 2.75c; eastern Mich., 2.80c; New York, del., 3.01c; Phila., del., 2.98c, San Francisco (base, del.), 3.33-3.65c; Los Angeles (base, del.), 3.325-3.56c; Seattle, 3.285c, base.

Rail Steel Bars: Price, 2.60c-2.95c, same basing points as merchant carbon bars, except base is 10 tons.

Hot-Rolled Alloy Bars: Pittsburgh, Youngstown, Chicago, Canton, Massillon, Buffalo, Bethlehem, base 20 tons one size, 3.05c; Detroit, del., 3.20c; eastern Mich., 3.25c. (Texas Steel Co. uses Chicago base price as maximum fob Fort Worth, Tex., price on sales outside Texas, Oklahoma.)

Cold-Finished Carbon Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, base, 20,000-39,999 lb, 3.20c; Detroit, 3.35c; Toledo, 3.40c.

Cold-Finished Alloy Bars: Pittsburgh, Chicago, Gary, Cleveland, Buffalo, Canton, base, 3.80c; Detroit, del., 3.95c; eastern Mich., 4.00c.

Reinforcing Bars (New Billet): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Sparrows Point, Buffalo, Youngstown, base, 2.45c; Detroit, del., 2.60c; eastern Mich. and Toledo, 2.65c; San Francisco (base, del.), 3.03c; Los Angeles (base, del.), 3.025c; Seattle, 2.985c, base.

Reinforcing Bars (Rail Steel): Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Buffalo, base, 2.60c-2.95c; Detroit, del., 2.75c; eastern Mich. and Toledo, del., 2.80c.

Iron Bars: Single refined, Pitts., 6.15c; double refined, 7.00c; Pittsburgh, staybolt, 7.85c.

Sheets, Strip

Hot-Rolled Sheets: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Buffalo, Youngstown, Sparrows Point, Middletown, base, 2.50c; Detroit, del., 2.65c; eastern Mich., del., 2.70c; Philadelphia, del., 2.70c; New York, del., 2.79c. (Andrews Steel Co., quotes on Middletown, O., base for shipment to Detroit area; Alan Wood Steel Co., Conshohocken, Pa., quotes 3.10c, Sparrows Point, Md., base; Granite City Steel Co., 2.875c, fob Granite City, Ill., 2.775c, fob Gary or Birmingham.)

Cold-Rolled Sheets: Pittsburgh, Chicago, Cleveland, Gary, Buffalo, Youngstown, Middletown, base, 3.20c; Granite City, base, 3.30c; del., 3.35c; eastern Mich., del., 3.40 York, del., 3.61c; Philadelphia, del., 3.

Galvanized Sheets, No. 10: Pittsburgh, Gary, Birmingham, Youngstown, Point, Canton, Middletown, base 3.5 York, del., 3.84c; Philadelphia, del., 3.

Corrugated Galvanized Sheets, No. 1 burgh, Chicago, Gary, Birmingham, bas

Culvert Sheets, No. 16, not corrugated alloy: Pittsburgh, Chicago, Gary, Birm 4.15c; Granite City, 4.25c; copper iro pure iron, 4.50c.

Aluminized Sheets, No. 20 hot-dipped, cut to lengths: Pittsburgh, 9.00c.

Long Ternes, No. 10: Pittsburgh, Gary, base, 3.55c.

Enameling Sheets, No. 12: Pittsburgh, Gary, Cleveland, Youngstown, Mi base, 3.55c; Granite City, base, 3.65c; del., 3.70c; eastern Mich., 3.75c.

Electrical Sheets, No. 24: Field: 4.2 burgh, Chicago, Gary; 4.30c, Koko Armature: 4.50c, Pittsburgh, Chicag 4.60c, Granite City, Ill., Kokomo, In trical: 5.00c, Pittsburgh, Chicago, Ga Granite City, Kokomo. Motor: 5.7 burgh, Chicago, Gary; 5.85c, Gra Dynamo: 6.45c, Pittsburgh; 6.55c, Gra Transformer 72, 6.95c; 65, 7.65c; 58, 9.15c, Pittsburgh.

Hot-Rolled Strip: Pittsburgh, Chica Birmingham, Youngstown, base, 2.50c del., 2.65c; eastern Mich., del., 2.7 perior Steel Corp., 3.30c, Pittsburgh.

Cold-Rolled Strip, 0.25 carbon and l burgh, Cleveland, Youngstown, 3.20c base, 3.30c; Detroit, del., 3.35c; east 3.40c; Worcester, base, 3.40c. (Sup Corp., 4.70c, Pittsburgh.)

Cold-Finished Spring Steel: Pittsbur land base: 0.26-0.40 carbon, 3.20c; ov 0.60 carbon, 4.70c; over 0.60 to 0. add 0.20c for Worcester.

Tin, Terne, Plate

Tin Plate: Pittsburgh, Chicago, Gary, Warren, O., 100-lb base box, $5.75; Granite City, Birmingham, Sparrows Point, $5.85.

Electrolytic Tin Plate: Pittsburgh, Gary, Warren, O., 100-lb base box 0.25 lb tin, $4.85; 0.50 lb tin, $5.05; 0.75 lb tin, $5.25; Granite City, Birmingham, Sparrows Point, $4.95, $5.15, $5.35, respectively.

Tin Mill Black Plate: Pittsburgh, Chicago, Gary, Warren, O., base 29-gage and lighter, 3.60c; Granite City, Birmingham, Sparrows Point, 3.70c.

Manufacturing Ternes (Special Coated): Pittsburgh, Chicago, Gary, 100-base box $4.90; Granite City, Birmingham, Sparrows Point, $5.00.

Roofing Ternes: Pittsburgh base per package 112 sheets; 20 x 28 in., coating I. C. 8-lb $13.50; 15-lb $15.50.

Plates

Carbon Steel Plates: Pittsburgh, Chicago, Gary, Cleveland, Birmingham, Youngstown, Sparrows Point, 2.65c; Coatesville, Claymont, Geneva, Utah, 2.80c; New York, del. 2.94c; Phila., del., 2.85c; St. Louis, del., 2.47c; Boston, del., 2.86c. San Francisco and Los Angeles, del., 3.46-3.52c. (Central Iron & Steel Co., Harrisburg, Pa., 3.40c, basing points; Alan Wood Steel Co., Conshohocken, Pa., 2.80c, Coatesville and Claymont equivalent.)

Floor Plates: Pittsburgh, Chicago, 3.90c.

Open-Hearth Alloy Plates: Pittsburgh, Chicago, 3.787c; Coatesville, 4.15c.

Clad Steel Plates: Coatesville, 10% cladding: nickel clad, 21.50c; inconel-clad, 30.00c; monel-clad, 29.00c.

Shapes

Structural Shapes: Pittsburgh, Chicago, Gary, Birmingham, Buffalo, Bethlehem, 2.50c; Geneva, Utah, 2.65c; New York, del., 2.70c; Phila., del., 2.64c. San Francisco and Los Angeles, del., 3.37c-3.41c.

(Phoenix Iron Co., Phoenixville, Pa., nominally, 3.05c, Bethlehem, Pa., equivalent.)

Steel Piling: Pittsburgh, Chicago, Buffalo, $3 per 100 lb.

Wire and Wire Products

(Fob Pittsburgh, Chicago, Cleveland and Birmingham per 100 pounds).

Wire to Manufacturers in carloads

Bright, basic or bessemer ..... *$3.30-$3.55
Spring (except Birmingham) **$4.25

Wire Products to Trade

Nails and Staples

Standard and cement-coated ..... †$3.75-$4.50
Galvanized ..... ‡$3.75-$4.50

Wire, Merchant Quality

Annealed (6 to 8 base) ..... §$3.95
Galvanized (6 to 8 base) ..... §$4.40
(Fob Pittsburgh, Chicago, Birmingham, per base column)

Woven fence, 15 gage and heavier ..... ††84
Barbed wire, 80-rod spool ..... ††94
Barbless wire, twisted 94
Fence posts (no clamps) ..... ††82
Bale ties, single loop ..... ††86

* Worcester, $3.40, Duluth, $3.35, base. San Francisco (base, del.) $4.31 for bright basic only.

** Worcester $4.35, Duluth and Trenton, N. J., $4.50, base. San Francisco (base, del.) $5.63 for MB spring wire; $5.28, black premier.

† Worcester $4.05, Cleveland $3.85, base. San Francisco (base del.) $4.83.

‡ Duluth $3.75, Cleveland $3.85, base. San Francisco (base, del.) $4.83.

§ Worcester $4.05, annealed, $4.50, galvanized. Duluth $3.95, annealed; $4.40, galvanized base. San Francisco (base, del.) $4.96, annealed; $5.41, galvanized.

†† San Francisco (base, del.): Woven fence, 107; barbed wire, 114; bale ties, 110. Duluth (base): Woven fence, 84; barbed wire, 94; fence posts, 90.

Rails, Supplies

Rails: Standard, over 60-lb. fob mill, $2.50 per 100 lb. Light rails (billet), Pittsburgh, Birmingham, $2.85 per 100 lb; light rails (rail steel), $2.95, Williamsport, Pa.

Relaying, 35 lb and over, fob railroad and basing point, $43-$46 per net ton.

Supplies: Track bolts, 6.50c; heat treated, 6.75c. Tie plates, $2.80 per 100 lb, fob mill; $3.15 base, Seattle. Splice bars, $3 per 100 lb. Standard spikes, 3.65c-4.50c; screw spikes, 5.30-6.40c.

Tubular Goods

Standard Pipe: Base price in carlots, threaded and coupled, to consumers about $200 a net ton. Base discounts Pittsburgh on all types; Lorain on steel butt weld, and seamless; Gary, Ind., 2 points less on steel lap weld and 1 point less on steel butt weld on sizes produced in that district.

Butt Weld

	Steel		Iron	
In.	Blk.	Gal.	In.	Blk. Gal.
⅛	48	23	⅛	— 2 +20
¼ & ⅜	51	30½	⅜	—11½ +10
½	55½	41	1-1¼	—17 + 2
¾	58½	45	1½	—22½ — 1½
1-3	60½	47½	2	—23 — 2

Lap Weld

	Steel		Iron	
In.	Blk.	Gal.	In.	Blk. Gal.
2	53	39½	1¼	— 1 +20
2½-3	56	42½	1½	— 7 +13
3½-6	58	44½	2	—14½ + 5½
*8	58	42½	2½-3½	—17 + 1½
*10	57½	42	4	—21 — 4
*12	56½	41	4½-8	—19 — 2½
			9-12	—10 + 7

* Not T. & C.

Seamless Steel

In.	Blk.	Gal.	In.	Blk.	Gal.
2	52	38½	*8	57	42
2½-3	55	41½	*10	56½	42
3½-6	57	43½	*12	55½	41

* Not T. & C.

Line Pipe: Base price in carlots to consumers about $200 a net ton. Base discounts Pittsburgh and Lorain, O.

In.	Seamless	In.	Butt Weld
2	51	⅛	47
2½ & 3	54	¼ & ⅜	50
3½ to 8	56	½	54½
10	55½	¾	57½
12	54½	1 to 3	59½

Boiler Tubes: Net base prices per 100 feet, fob Pittsburgh, in carload lots, minimum wall, cut lengths 4 to 24 feet, inclusive.

O.D.		——Seamless——		—Elec. Weld—	
Sizes	B.W.G.	Hot Rolled	Cold Drawn	Hot Rolled	Cold Drawn
1"	13	....	$10.89	$10.62	$10.62
1¼"	13	....	12.90	10.59	12.58
1½"	13	$12.00	14.26	11.70	13.90
1¾"	13	13.65	16.23	13.31	15.82
2"	13	15.29	18.17	15.00	17.95
2¼"	13	17.05	20.26	16.71	20.00
2¼"	12	18.78	22.31	18.38	22.00
2½"	12	20.57	24.43	20.11	24.07
2¾"	12	21.80	25.89	21.27	25.46
3"	12	22.87	27.18	22.26	26.68
3¼"	11	26.88	31.94	26.15	31.33
3½"	11	28.86	34.30	28.06	33.64
4"	10	35.82	42.55	34.78	41.68
4½"	9	47.48	56.42	....	....
5"	9	54.96	65.30	....	....
6"	7	84.38	100.25	....	....

Pipe, Cast Iron: Class B, 6-in. and over $65 per net ton, Birmingham; $70, Burlington, N. J.; $75.56, del., Chicago; 4-in. pipe, $5 higher, Class A pipe, $3 a ton over class B.

Bolts, Nuts

Fob Pittsburgh, Cleveland, Birmingham, Chicago; add 15c per cwt, Lebanon, Pa. Additional discounts: 5 for carloads; 15 for full containers, except tire, step and plow bolts.

Carriage and Machine

½-in. and smaller; up to 6 in. in length ..... 55 off
⅝ and ⅞, up to 6 in. in length ..... 52 off
¾ x 6 in. ..... 49 off
⅞ and 1 in. x 6 in. length ..... 51 off
1⅛ in. and larger in all lengths and 1/16 in. and larger in lengths over 6 in. ... 48 off
½ in. and smaller, longer than 6 in. ... 45 off
Tire bolts ..... 38½ off
Step bolts ..... 46 off
Plow bolts ..... 57 off

Stove Bolts

In packages, nuts separate, 60-10 off; bulk 74 off on 15,000 of 3-in. and shorter, or 5000 over 3-in., nuts separate.

Nuts

	A.S. Light	A.S. Reg. and Heavy
Semifinished hexagon	51 off	....
⅞-in. and smaller	....	48 off
½-in.-1-in.	48 off	....
⅞-in.-1-in.	....	47 off
1⅛-in.-1½-in.	46 off	45 off
1⅝-in. and larger	....	44 off

Additional discount of 15 for full containers.

Hexagon Cap Screws

Upset 1-in., smaller (10-20 bright) .... 56 off
Upset (10-35 heat treated)
⅝ x 6 ..... 51 off
⅝, ⅞ & 1 x 6 ..... 47 off

Square Head Set Screws

Upset 1-in. and smaller ..... 61 off
Headless, ¼-in. and larger ..... 46 off
No. 10 and smaller ..... 56 off

Rivets

Fob Pittsburgh, Cleveland, Chicago Birmingham

Structural 5.25c
Lebanon, Pa. 5.40c
⅞-in and under ..... 55-5 off
Lebanon, Pa. ..... 55-5 off plus 15c per cwt.

Washers, Wrought

Fob Pittsburgh, Chicago, Philadelphia, to jobbers and large nut and bolt manufacturers, lcl ..... $1.50-$2.00 off

Tool Steels

Tool Steel: Pittsburgh, Bethlehem, Syracuse, Canton, O., Dunkirk, N. Y., base, cents per lb; reg. carbon 15.15c; extra carbon 19.48c; special carbon 23.80c; oil-hardening 25.97c; high carbon-chromium 46.53c.

W	Cr	V	Mo	Base, per lb
18.00	4	1	....	72.49c
1.5	4	1	8.5	58.43c
....	4	2	8	58.43c
6.40	4.15	1.90	5	62.22c
5.50	4.50	4	4.50	75.74c

Stainless Steels

Base, Cents per lb

Grade	Bars, Drawn Wire, Structurals	Plates	Sheets	Hot Rolled Strip	Cold Rolled Strip
CHROMIUM NICKEL STEELS					
301	26.00c	29.50c	37.00c	22.00c	28.00c
302	26.00	29.50	37.00	23.50	30.50
303	28.50	31.50	39.00	29.50	36.00
304	27.50	31.50	39.00	25.50	32.50
308	31.50	37.00	44.50	31.00	38.00
309	39.00	43.50	51.00	40.50	51.00
310	53.50	56.50	57.50	53.00	61.00
316	43.50	48.00	52.00	43.50	52.00
321	31.50	37.00	44.50	32.00	41.50
347	36.00	41.50	49.00	36.00	45.50
431	21.00	24.00	31.50	19.00	24.50
440A	26.00	31.00	36.50	26.00	30.50
STRAIGHT CHROMIUM STEEL					
403	23.50	27.00	32.00	23.00	29.50
410	20.50	23.50	29.00	18.50	24.00
416	21.00	24.00	29.50	20.00	25.50
420	26.00	31.00	36.50	26.00	39.50
430	21.00	24.00	31.50	19.00	24.50
430F	21.50	24.50	32.00	20.50	27.00
442	24.50	28.00	35.50	26.00	35.00
443	24.50	28.00	35.50	26.00	35.00
446	30.00	33.00	39.50	38.00	56.50
*501	9.00	13.00	17.50	13.00	18.50
*502	10.00	14.50	18.50	14.50	19.50
†STAINLESS CLAD STEEL (20%)					
304	....	24.00	22.00	....	....
410	....	22.00	20.00	....	....
430	....	22.50	20.50	....	....
446	....	29.00	27.00	....	....

* Low chromium. † Fob Pittsburgh and Washington, Pa.; plate prices include annealing and pickling.

Metallurgical Coke

Price Per Net Ton
Beehive Ovens

Connellsville, furnace ..... *$8.75-$9.00
Connellsville, foundry 9.75-11.00
New River, foundry 11.75
Wise county, foundry 11.15
Wise county, furnace 10.65

* Operators of hand-drawn ovens using trucked coal, $9.35-$9.60.

Coke By-Products

COKE BY-PRODUCTS
Spot, gal, freight allowed east of Omaha

Pure and 90% benzol 17.00c
Toluol, two degrees 22.00c
Industrial xylol 22.00c
Solvent naphtha 26.00c

Per pound fob works

Phenol (car lots, returnable drums) 11.25c
Do., less than carlots 12.00c
Do., tank cars 10.25c

Eastern plants, per pound

Naphthalene flakes, balls, bbl, to jobbers, "household use" 9.50c

Per ton, bulk, fob plants

Sulphate of ammonia $30.00

PIG IRON

Prices per gross ton. Minimum delivered prices do not include 3 per cent federal tax.

	No. 2 Foundry	Basic	Bessemer	Malleable
Bethlehem, Pa., base	$31.50	$31.00	$32.50	$32.00
Newark, N. J., del.	33.34	32.84	34.34	35.54
Brooklyn, N. Y., del.	34.50	....	....	35.00
Birdsboro, Pa., base	34.50	34.00	35.50	35.00
Birmingham, base	26.88	26.38	31.50	....
Baltimore, del.	33.28	....	....	....
Chicago, del.	31.12	....	....	....
Cincinnati, del.	31.75	31.25	....	....
Newark, N. J., del.	32.96	....	....	....
Philadelphia, del.	32.13	31.63	....	....
St. Louis, del.	30.87	31.79	....	....
Buffalo, base	30.50	30.00	31.50	31.00
Boston, del.	36.98	36.48	37.98	37.48
Rochester, del.	32.34	31.84	33.34	32.84
Syracuse, del.	33.00	32.50	34.00	33.50
Canton, Massillon	30.50	30.00	....	30.50
Chicago, base	30.50	30.00	31.00	30.50
Milwaukee, del.	31.82	31.32	32.32	31.82
Muskegon, Mich., del.	34.33	....	....	34.33
Cleveland, fob furnace	30.50	30.00	31.00	30.50
Akron	32.17	31.67	32.67	32.17
Duluth, base	31.00	30.50	31.50	31.00
Erie, Pa., base	30.50	30.00	31.50	31.00
Everett, Mass., base	29.50	29.00	30.50	30.00
Boston, del.	30.00	29.50	31.00	30.50
Granite City, Ill., base	30.50	30.00	31.00	30.50
St. Louis, del.	31.25	30.75	....	31.25
Neville Island, Pa., base	30.50	30.00	31.00	30.50
†Pittsburgh, del., N.&S. sides.	31.33	30.83	31.83	31.33
Provo, Utah, base	30.50	30.00	....	....
Sharpsville, Pa., base	30.50	30.00	31.00	30.50
Steelton, Pa., base	31.50	31.00	32.50	32.00
Swedeland, Pa., base	31.50	31.00	32.50	32.00
Philadelphia, del.	32.51	32.01	....	33.01
Troy	31.50	31.00	32.50	32.00
Toledo, O., base	30.50	30.00	31.00	30.50
Cincinnati, del.	34.00	33.50	....	....
Youngstown, O., base	30.50	30.00	31.00	30.50
Mansfield, O., del.	33.48	32.98	33.98	33.48

† To Neville Island base add: 66c for McKees Rocks, Pa.; $1.01 Lawrenceville, Homestead, McKeesport, Ambridge, Monaco, Aliquippa; 97c (water), Monongahela; $1.33, Ookmont, Verona; $1.49 Brackenridge.

Exceptions to above prices: Kaiser-Frazer Parts Corp., Struthers, O., charges 50 cents a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable pig iron.

High Silicon Silvery

6.00-6.50 per cent (base)	$38.00		
6.51-7.00	$39.00	9.01- 9.50	44.00
7.01-7.50	40.00	9.51-10.00	45.00
7.51-8.00	41.00	10.01-10.50	46.00
8.01-8.50	42.00	10.51-11.00	47.00
8.51-9.00	43.00	11.01-11.50	48.00

Fob Jackson, O., per gross ton, Buffalo base $1.25 higher. Buyer may use whichever base is more favorable.

Electric Furnace Ferrosilicon: Si 14.01-14.50%, $52.75, Jackson, O.; $56 Keokuk, Iowa; $54, Buffalo and Niagara Falls, N. Y. Add $1 a ton for each additional 0.5% Si to 18%; 50c for each 0.5% Mn over 1%; $1 a ton for 0.045% max. phos.

Bessemer Ferrosilicon

Prices same as for high silicon silvery iron, plus $1 per gross ton.

Charcoal Pig Iron

Semi-cold blast, low phosphorus. Fob furnace, Lyles, Tenn.... $37.50 (For higher silicon irons a differential over and above the price of base grade is charged as well as for the hard chilling iron, Nos. 5 and 6.)

Gray Forge

Neville Island, Pa. $30.00

Low Phosphorus

Steelton, Pa., Buffalo, Troy, N. Y., $36, base; Birdsboro, Pa., $39, base; Philadelphia, $38.16, del. Intermediate phosphorus, Central furnace, Cleveland, $33.

Differentials

Basing point prices are subject to following differentials:

Silicon: An additional charge not to exceed 50 cents a ton for each 0.25 per cent silicon in excess of base grade (1.75% to 2.25%).

Phosphorus: A reduction of 38 cents a ton for phosphorus content of 0.70 per cent and over.

Manganese: An additional charge not to exceed 50 cents a ton for each 0.50 per cent, or portion thereof, manganese in excess of 1%.

Nickel: An additional charge for nickel content as follows: Under 0.50%, no extra; 0.50% to 0.74%, inclusive, $2 a ton; for each additional 0.25% nickel, $1 a ton.

Refractories

Per 1000, fob shipping point Net Prices

Fire Clay Brick

Super Duty

Pa., Mo., Ky.	$81.00

High Heat Duty

Pa., Ill., Md., Mo., Ky.	65.00
Ala., Ga.	65.00
N. J.	70.00

Intermediate Heat Duty

Ohio	57.00
Pa., Ill., Md., Mo., Ky.	59.00
Ala., Ga.	51.00
N. J.	62.00

Low Heat Duty

Pa., Md., Ohio	51.00

Malleable Bung Brick

All bases	75.00

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry Press	42.00
Wire Cut	40.00

Silica Brick

Pennsylvania	65.00
Joliet, E. Chicago	74.00
Birmingham, Ala.	65.00

Magnesite

Domestic dead-burned grains, net ton, fob Chewelah, Wash.

Bulk	22.00
Bags	26.00

Basic Brick

Net ton, fob Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	54.00
Chem. bonded chrome	54.00
Magnesite brick	76.00
Chem. bonded magnesite	65.00

ORES

Lake Superior Iron Ore

Gross ton, 51½% (Natural) Lower Lake Ports

Old range bessemer	$5.95
Old range nonbessemer	5.80
Mesabi bessemer	5.70
Mesabi nonbessemer	5.55
High phosphorus	5.55

Eastern Local Ore

Cents, units, del. E. Pa.

Foundry and basic 56-63% contract	14.00

Foreign Ore

Cents per unit, c/f Atlantic ports

Manganiferous ore, 45-55% Fe., 6-10% Mn.	Nom.
N. African low phos.	Nom.
Swedish basic, 60 to 68%	13.00
Spanish, No. African basic, 50 to 60%	Nom.
Brazil iron ore, 68-69% fob Rio de Janeiro	7.50-8.00

Tungsten Ore

Chinese Wolframite, per short ton unit, duty paid	$24.00

Chrome Ore

Gross ton fob cars, New York, Philadelphia, Baltimore, Charleston, S. C., Portland, Oreg., or Tacoma, Wash. (S S paying for discharge; dry basis, subject to penalties if guarantees are not met.)

Indian and African

48% 2.8:1	$37.50
48% 3:1	39.00
48% no ratio	31.00

South African (Transvaal)

44% no ratio	$27-$27.50
45% no ratio	28.00
48% no ratio	30.00
50% no ratio	31.00

Brazilian—nominal

44% 2.5:1 lump	$33.65
48% 3:1 lump	43.50

Rhodesian

45% no ratio	$27-$27.50
48% no ratio	30.00
48% 3:1 lump	39.00

Domestic (seller's nearest rail)

48% 3:1	$39.00

Manganese Ore

Sales prices of Office of Metals Reserve, cents per gross ton unit, dry, 48%, at New York, Philadelphia, Baltimore, Norfolk, Mobile and New Orleans, 85c; Fontana, Calif., Provo, Utah, and Pueblo, Colo., 91c; prices include duty on imported ore and are subject to established premiums, penalties and other provisions. Price at basing points which are also points of discharge of imported manganese ore is fob cars, shipside, at dock most favorable to the buyer. Outside shipments direct to consumers at 15c per unit less than Metals Reserve prices.

Molybdenum

Sulphide conc., lb., Mo. cont., mines	$0.75

Fluorspar

Metallurgical grade, fob shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $33; 65% to 70%, $32; 60% to 65%, $31; less than 60%, $30.

HIGH-STRENGTH—LOW-ALLOY STEELS

Prices in dollars per 100 pounds.

	Pittsburgh	Chicago	Gary	Youngstown	Sparrows Point	Buffalo	Bethlehem	Canton	Massillon
Sheets, Hot-Rolled	3.75-3.85	3.75-3.85	3.75-3.85	3.85	3.85	3.75-3.85	...	...	...
Cold-Rolled	4.55-4.75	4.55-4.75	4.55-4.75	4.75	...	4.55-4.75	...	...	...
Galvanized	5.40	.....	.....	...	...	.....	...	...	...
Strip, Hot-Rolled	3.75-3.85	3.75-3.85	3.75-3.85	3.85	...	.....	...	...	...
Cold-Rolled	4.55	4.65	4.65	4.65	...	.....	...	...	...
Shapes, Structural	3.85	3.85	.....	3.85	...	.....	3.85	...	...
Plates	4.10	4.10	4.10	...	4.10	.....	...	...	...
Bars and Bar Shapes	4.00	4.00	4.00	4.00	...	4.00	4.00	4.00	4.00

Note: Lower level of quoted ranges represent prices for NAX High Tensile, produced by Great Lakes Steel Corp., Detroit.

WAREHOUSE STEEL PRICES

Base prices, cents per pound, for delivery within switching limits, subject to extras

	SHEETS					STRIP		BARS				PLATES	
	H-R 10G	C-R 10G	C-R 17G	Gal. *10G	Gal. *24G	†H-R	C-R	H-R	C-F	H-R Alloy (§4140)	Structural Shapes	Carbon ¼"-¾"	Floor ⅜" & Thicker
Boston (city)	4.50	....	5.22[4]	6.80[4]	6.80[4]	4.65	6.36	4.62	5.47	7.12	4.47	4.80	6.42
‡New York (city)	4.42	....	5.27[8]	5.47[5]	....	4.62	....	4.62	5.42	8.42[12]	4.37	4.72	6.35
New York (country)	4.32	....	5.17[8]	5.37[5]	....	4.52	....	4.52	....	....	4.27	....	6.25
Philadelphia (city)	4.24	5.73[9]	5.33[9]	5.29[5]	6.54[5]	4.43	5.28	4.48	5.38	6.87	4.22	4.40	5.93
Philadelphia (country)	4.14	5.63[9]	5.23[9]	5.19[5]	6.44[5]	4.33	5.18	4.38	....	6.60	4.12	4.30	5.83
Baltimore (city)	4.09	6.15[8]	5.65[8]	5.14[5]	6.39[5]	4.40	....	4.45	5.35	....	4.34	4.39	5.90
Baltimore (country)	3.59	6.05[8]	5.55[8]	....	....	....	....	....	4.85	....	4.24	4.29	5.80
Washington (city)	4.35	....	....	5.18[5]	6.43[5]	4.65	....	4.70	5.60[11]	....	4.60	4.65	6.60
Norfolk, Va.	4.35	....	....	....	....	....	....	4.75	5.50	....	4.50	4.50	6.25
Buffalo (city)	4.00	....	4.70[6]	4.35[5]	....	4.30	4.95	4.05	4.95	....	4.05	4.60	5.90
Buffalo (country)	3.90	....	4.60[6]	4.95[5]	....	3.90	4.60	3.95	4.85	6.60	3.95	4.20	5.45
Pittsburgh (city)	4.00	5.15[8]	4.70[8]	5.05[5]	6.30[5]	4.00	4.95	4.05	4.95	6.60	4.05	4.30	5.55
Pittsburgh (country)	3.90	5.05[8]	4.60[8]	4.95[5]	6.20[5]	3.90	4.85	3.95	4.85	6.60	3.95	4.20	5.45
Youngstown, O. (city)	4.188	5.338	4.888	5.05	6.30	4.00	....	4.238	5.138	....	4.218	4.488	5.178
Youngstown, O. (country)	....	....	....	4.95	6.20	3.90	....	....	....	....	....	....	....
Cleveland (city)	4.00	5.15[8]	4.70[8]	5.238[5]	6.488[5]	4.00	5.05	4.05	4.95	6.858	4.311	4.30	5.811
Cleveland (country)	3.90	5.05[8]	4.60[8]	....	....	3.90	4.95	3.95	4.85	....	....	4.20	....
Cincinnati	4.116	5.266[8]	....	5.166[5]	....	4.394	....	4.403	5.303	....	4.444	4.653	5.944
Chicago (city)	4.00	5.15[8]	4.70[8]	5.05[5]	6.30[5]	4.00	5.05	4.05	4.95	6.60	4.05	4.30	5.70
Chicago (country)	3.90	5.05[8]	4.60[8]	4.95[5]	6.20[5]	3.90	4.95	3.95	4.85	6.60	3.95	4.20	5.60
Milwaukee	4.199	5.349[8]	4.899[8]	5.249[5]	6.499[5]	4.199	5.249	4.249	5.149	6.899	4.249	4.499	5.899
St. Paul	4.384[1]	5.534[8]	5.084[8]	5.434[5]	6.684[5]	4.404[13]	....	4.434[13]	5.726[11]	7.084[11]	4.434[13]	4.684[13]	6.084[13]
Indianapolis	4.04	....	4.84[8]	5.29[5]	6.54[5]	4.24	....	4.36††	5.26	....	4.36	4.61	6.01
St. Louis	4.199	....	4.899[9]	....	6.674[5]	4.199	....	4.249	5.324[18]	7.074	3.999	3.999	5.999
Birmingham (city)	3.85[20]	....	....	5.20[5]	....	4.10[20]	....	4.05[20]	5.83	....	4.05	4.30	6.56
Birmingham (country)	3.75[20]	....	....	5.20[5]	....	4.00[20]	....	3.95[20]	....	....	3.95	4.20	....
New Orleans	4.46**	....	5.77[8]	....	....	4.83[20]	....	4.78**	6.14[11]	....	....	4.68**	4.83[20]	6.94[20]
Houston, Tex	4.50[1]	....	....	....	6.00[12]	5.80[1]	....	....	***	....	....	....	5.60	6.40
Omaha, Nebr.	4.868	6.118[8]	....	5.918[5]	7.168[5]	4.862	....	4.918	5.818[11]	....	4.918	5.168	6.568
Los Angeles	5.55	....	7.10[8]	....	8.10[5]	5.65	8.35	5.10	6.90[19]	7.83	5.20	5.20	7.20
San Francisco	4.90§§	....	6.30[5]	....	7.35[5]	5.20[14]	8.35	4.75[14]	***	9.35[16]	4.90[14]	5.00[14]	6.80[14]
Tacoma, Wash.	....	....	....	7.30[5]	....	5.20[17]	....	4.90[17]	6.75[19]	8.95[19]	4.95[17]	5.25[17]	7.25[17]
Seattle	....	....	....	7.30[5]	....	5.20[17]	....	4.90[17]	6.75[19]	8.95[19]	4.95[17]	5.25[17]	7.25[17]

Base Quantities: 400 to 1999 pounds except as noted: Cold-rolled strip, 2000 to 39,999 pounds; cold finished bars, 1000 pounds and over; [1]—any quantity; [2]—300 to 1999 pounds; [3]—150 to 2249 pounds; [4]—three to 24 bundles; [5]—450 to 1499 pounds; [6]—one bundle to 1499 pounds; [7]—one to nine bundles; [8]—400 to 1499 pounds; [9]—1000 to 1999 pounds; [10]—450 to 39,999 pounds; [11]—1000 to 39,999 pounds; [12]—1000 pounds and over. [13]—400 to14,999 pounds; [14]—400 to 39,999; [15]—2000 lb and over; [16]—1000 to 49,999; [17]—300 to 9999 pounds; [18]—1500 to 1999 pounds; [19]—1500 to 39,999; [20]—400 to 3999 pounds.

* Includes gage and coating extra, except Birmingham (coating extra excluded); † does not include gage extras; ‡ basing point cities with quotations representing mill prices plus warehouse spread; § as rolled, except New York, Jersey City, Indianapolis and San Francisco where price represents annealed bars; ** add 0.46 for sizes not rolled in Birmingham; †† same prices quoted for Jersey City, N. J.; ‡‡ add 15c for 100 lb for slow moving items; §§ 18 gage and heavier; *** rounds under ⅜ in. 7.00c, ⅜ in. and over 6.50c, squares, hexagons and flats 6 in. and narrower 7.50c, flats over 6 in. 8.25c at San Francisco; bar size angles, flats, rounds 5.00c, squares and half ovals 5.15c and bar size channels 5.55c at Houston.

Open Market Prices of Leading Ferroalloy Products

Spiegeleisen: 19-21% carlot per gross ton, Palmerton, Pa., $40; Pittsburgh, $44.

Ferromanganese, standard: 78-82% c.l. gross ton, duty paid, $135 fob cars, Baltimore, Philadelphia or New York, whichever is most favorable to buyer, Birmingham, Ala. (where Sloss-Sheffield Steel & Iron Co. is producer); $140.25 fob cars, Pittsburgh, including 75c switching charge, (where Carnegie - Illinois Steel Corp. is producer); add $8 for packed c.l., $10 for ton, $13.50 for less ton; $1.70 for each 1%, or fraction contained manganese over 82% or under 78%.

Ferromanganese, low carbon: Eastern zone: Special, 21c; regular, 20.50c; medium, 14.50c; central zone: special, 21.30c; regular, 20.80c; medium, 14.80c; western zone: Special, 21.70c; regular, 21.20c; medium, 15.20c. Prices are per pound contained Mn, bulk carlot shipments, fob shipping point, freight allowed. Special low-carbon has content of 90% Mn, 0.10% C, and 0.06% P.

Ferromanganese Briquets: (Weight approx. 3 lb and containing exactly 1 lb Mn) Prices per lb of briquets: Contract, carlots, bulk 6.40c, packed .90c, tons 7.30c, less 7.70c, eastern, freight allowed: 6.65c, 7.15c, 7.90c and 8.30c, central; 7.20c, 7.70c, 8.80c and 10.20c, western; spot up .25c; notched up 0.25c.

Ferrotungsten: Spot, 10.000 lb or more, per lb contained W, $2; contract, $1.98; freight allowed as far west as St. Louis.

Ferrotitanium: 40-45%, R.R. freight allowed, per lb contained Ti; ton lots $1.23; less-ton lots $1.25; eastern. Spot up 5c per lb.

Ferrotitanium: 20-25%, 0.10 maximum C; per lb contained Ti; ton lots $1.35; less-ton lots $1.40 eastern. Spot up 5c per lb.

Ferrotitanium, High-Carbon: 15-20% contract basis, per net ton, fob Niagara Falls, N. Y., freight allowed to destination east of Mississippi river and north of Baltimore and St. Louis, 6.8% C $142.50; 3-5% C $157.50.

Ferrovanadium: V .35-55%, contract basis, per lb contained V, fob producers plant with usual freight allowances; open-hearth grade $2.70; special grade $2.80; highly-special grade $2.90.

Ferromolybdenum: 55-75% per lb, contained Mo, fob Langeloth and Washington, Pa., furnace, any quantity 95.00c.

Ferrophosphorus: 17-19%, based on 18% P content with unitage of $3 for each 1% of P above or below the base; gross tons per carload fob sellers' works, with freight equalized with Rockdale, Tenn.; contract price $58.50, spot $62.25.

Ferrosilicon: Contract, lump, packed; eastern zone quotations: 90-95% c.l. 12.95c, ton lots 13.45c, smaller lots 13.95c; 80-90%, c.l. 11.35c, ton lots 11.90c, smaller lots 12.45c; 75%, c.l. 10.15c, ton lots 10.75c, smaller lots 11.35c; 50% c.l. 8.45c, ton lots 9.10c, smaller lots 9.75c. Deduct 1.0c for bulk carlots 75%, 80-90%, 90-95%. Prices are fob shipping point, freight allowed, per lb of contained Si. Spot prices 0.25c higher on 80-90%, 0.30c on 75%, 0.45c on 50%.

Ferroboron: (B 17.50% max. and C 1.50% max., Al 0.50% max. and C 0.50% max.) Prices per lb of alloy, contract, ton lots $1.20, less ton lots $1.30, eastern, freight allowed; $1.2075 and $1.3075 central; $1.229 and $1.329, western; spot add 5c.

Ferrocolumbium: 50-60%, per lb contained columbium in gross ton lots, contract basis, R. R. freight allowed, eastern zone, $2.50; less ton lots $2.55. Spot up 10c.

Ferrochrome: Contract, lump, packed; **high carbon,** eastern zone, c.l. 16.20c, ton lots 16.80c; central zone, add 0.40c and 1.30c; western zone, add 0.55c and 2.10c. Deduct 0.60c for bulk carlots.

High carbon, high nitrogen, add 5c to all high carbon ferrochrome prices. Deduct 0.55c for bulk carlots. Spot prices up 0.25c.

Low carbon, eastern zone, bulk, c.l., max. 0.06% C 23c; 0.1% 22.50c, 0.15% 22c, 0.2% 21.50c, 0.5% 21c, 1% 20.50c, 2% 19.50c; add 1c for 2000 lb to c.l.; central zone, add 0.4c for bulk, c.l., and 0.65c for 2000 lb to c.l.; western zone, add 0.5c for bulk, c.l., and 1.85c for 2000 lb to c.l.; carload packed differential 0.45c. Prices are per pound of contained Cr, fob shipping points.

Low carbon, high nitrogen: Add 2c to low carbon ferrochrome prices. For higher nitrogen low carbon, add 2c for each 0.25% of nitrogen over 0.75%.

Ferrochrome, Special Foundry: (Cr 62-66%, C above 5-7%.) Contract, 2-inch x D, packed, eastern zone, freight allowed, c.l. 17.05c, ton lots 17.60c, less than ton 18.30c; central zone, add 0.40c for c.l. and 1.30c for smaller lots; western zone, add 0.55c for c.l. and 2.10c for smaller lots. Deduct 0.60c for bulk carlots.

S. M. Ferrochrome, high carbon: (Cr 60-65%, Si, Mn and C 4-6% each.) Contract, lump, packed, eastern zone, freight allowed, c.l. 17.30c, ton lots 17.90c, less than ton 18.60c; central zone, add 0.40c for c.l. and 1.30c for smaller lots; western zone, add 0.55c for c.l. and 2.10c for smaller lots. Prices are per pound of contained chromium, spot prices 0.25c higher. Deduct 0.60c for bulk carlots.

S. M. Ferrochrome, low carbon: (Cr 62-66%, Si 4-6%, Mn 4-6% and C 1.25% max.). Contract, carlot, bulk 20.00c, packed 20.15c; ton lots 21.00c, less ton lots 22.00c, eastern, freight allowed, per pound contained Cr; 20.40c, 20.50c, 20.95c and 22.65c, central; 21.00c, 21.45c, 22.85c and 23.85c, western; spot up 0.25c.

Ferrochrome Briquets: Containing exactly 2 lb Cr, packed eastern zone, c.l. 10.35c, ton lots 10.75c, less than ton 11.15c; central zone, add 0.25c for c.l. and 0.90c for smaller lots; western zone, add 0.55c for c.l. and 2.10c for smaller lots. Deduct 0.50c for bulk carlots. Prices per pound of briquets; spot prices 0.25c higher; notched, 0.25c higher.

Chromium Metal: 97% min. Cr, max. 0.50% C, eastern zone, per lb contained Cr bulk, c.l. 79.50c, 2000 lb to c.l. 80c; central 81c and 82.60c; western 82.25c and 84.75c, fob shipping point, freight allowed.

Chromium-Copper: (Cr 8-11%, Cu 88-90%, Fe 1% max., Si 0.50% max.) Contract, any quantity, 45c, eastern, Niagara Falls, N. Y., basis, freight allowed to destination, except to points taking rate in excess of St. Louis rate to which equivalent of St. Louis rate will be allowed; spot up 2c.

Calcium metal; cast: Contract, ton lot or more, $1.60; 100 to 1999 lb, $1.95; less than 100 lb, $3.15 per lb of metal, eastern zone; $1.615, $1.965 and $3.185, western; spot up 5c.

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%), per lb of alloy. Contract, carlots, 15.50c, ton lots 16.50c and less 17.00c, eastern, freight allowed; 16.00c, 17.35c, and 17.85c, central; 18.05c, 19.10c and 19.60c western; spot up 0.25c.

Calcium - Silicon: (Ca 30-35%, Si

60-65% and Fe 3.60% max.), per lb of alloy. Contract, carlot, lump 13.00c, ton lots 14.50c, less 15.50c, eastern, freight allowed; 13.50c, 15.25c and 16.25c central; 15.55c, 17.40c and 18.40c, western; spot up 0.25c.

Silicon Metal: Min. 97% Si and max. 1% Fe, eastern zone, bulk, c.l. 13.65c; 2000 lb to c.l., 15.05c; central zone, 14.25c and 17.30c; western, 14.85c and 19.05c; min. 96% Si and max. 2% Fe, eastern, bulk, c.l. 13.15c, 2000 lb to c.l. 14.65c; central, 13.85c and 16.90c; western, 14.45c and 18.65c, fob shipping point, freight allowed. Price per lb contained Si.

Silicomanganese, containing exactly 2 lb Mn and about ¼ lb Si eastern zone, bulk, c.l. 6.15c, ton lots 7.65c; central zone, add 0.25c for c.l. and 0.60c for ton lots; western, add 0.80c for c.l. and 2.50c for ton lots. Notched, up 0.25c.

Ferrosilicon: Weighing about 5 lb and containing exactly 2 lb Si, packed, eastern zone, c.l. 4.20c, ton lots 4.60c, less than ton lots 5c; weighing about 2½ lb and containing 1 lb Si, packed, eastern zone, c.l. 4.35c, ton lots 4.75c, less 5.15c; notched 0.25c higher; central zone, add 0.25c for c.l. and 0.60c for smaller lots; western zone, add 0.45c for c.l. and 0.90c for smaller lots. Prices are fob shipping point, freight allowed; spot prices 0.25c higher. Deduct 0.50c for bulk carlots.

Manganese Metal: (Min. 96% Mn, max. 2% Fe), per lb of metal, eastern zone, bulk, c.l. 30c, 2000 lb to c.l., 32.00c; central 31.00c and 33.45c; western, 31.45c and 34.40c.

Electrolytic Manganese: 99.9% plus, fob Knoxville, Tenn., freight allowed east of Mississippi on 250 lb or more: Carlots 32c, ton lots 34c, drum lots 36c, less than drum lot 38c. Add 1½c for hydrogen-removed metal.

Manganese-Boron: (Mn 75% approx., B 15-20%, Fe 5% max., Si 1.50% max. and C 8% max.) Prices per lb of alloy. Contract, ton lots $1.89, less $2.01, eastern, freight allowed; $1.903 and $2.023, central; $1.935 and $2.055, western; spot up 5c.

Nickel-Boron: (B 15-18%, Al 1% max., Si 1.50% max., C 0.50% max., Fe 3% max., Ni, balance). Prices per lb of alloy, Contract, 5 tons or more $1.90, 1 ton to 5 tons $2.00, less than ton $2.10, eastern, freight allowed; $1.9125, $2.0125 and $2.1125, central; $1.9445, $2.0445 and $2.1445, western; spot same as contract.

Borosil: 3 to 4% B, 40 to 45% Si; $6.25 per lb contained B, fob Philo, O., freight not exceeding St. Louis rate allowed.

Bortam: B 1.5-1.9%, ton lots, 45c per lb; less-ton lots, 50c per lb.

Carbortam: B 0.90 to 1.15% net ton to carload, 8c per lb, fob Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 5-7%, Zr 5-7%, Ti 9-11% and B 0.55-0.75%) Prices per lb of alloy, contract, or spot carlots 35.00c, ton lots 37.00c, less 39.00c, eastern, freight allowed; 35.30c, 38.10c and 40.10c, central; 35.30c, 40.05c and 42.05c, western; spot up 0.25c.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7% and Fe approx. 20%) Prices per lb of alloy, contract, carlots 12.50c, ton lots 13.25c, less 14.00c, eastern zone, freight allowed; 12.80c, 14.35c and 15.10c, central; 12.80c, 16.30c and 17.05c, western; spot up 0.25c.

CMSZ Alloy 4: (Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75% and C 3.00-4.50%). Contract or spot, carlots, bulk 12.00c, packed 12.75c; ton lots 13.50c, less 14.25c, eastern zone, freight allowed; 12.30c, 13.05c, 14.60c, 15.35c, central; 12.30c, 13.05c, 16.65c, 17.30c, western.

CMSZ Alloy 5: (Cr 50-56%, Mn 4-6%, Si 13.50-16.00%, Zr 0.75-1.25%, C 3.50-5.00%) Prices per lb of alloy, contract or spot, carlots, bulk 11.75c, packed 12.50c, ton lots 13.25c, less 14.00c, eastern, freight allowed; 12.05c, 12.80c, 16.3 17.05c, western.

Zirconium Alloy: 12-15%, per of alloy, eastern, contract, carl bulk 4.85c, packed 5.30c, ton 5.65c, less 6.00c; spot up 0.25c.

Zirconium Alloy: Zr 35-40%, east contract basis, carloads in bulk package, per lb of alloy 14.50c, lots 15.75c, less 17.00c; spot 0.25c.

Alsifer: (Approx. 20% Al, 40% 40% Fe) Contract basis fob Niag Falls, N. Y., lump per lb 6.25c; lots 6.75c; less 7.25c. Spot up

Simanal: (Approx. 20% each Si, Al) Packed, lump, carload 9c, lots 9.25c, less-ton lots 9.75c per alloy; freight not exceeding Louis rate allowed.

Tungsten Metal Powder: Spot, less than 98.8%, $2.65, frei allowed as far west as St. Louis

Grainal: Vanadium Grainal No 87.5c; No. 6, 60c; No. 79, 45c; fob Bridgeville, Pa., usual fre allowance.

Vanadium Pentoxide, technic grade: Fused, approx. 89-92% V and 5.84% Na_2O; or air dried, 85% V_2O_5 and 5.15% Na_2O, $ per lb contained V_2O_5 fob p freight allowed on quantities of lb and over to St. Louis.

Lead, Silver Spark Nonferrous Metal Marke

Advances of one cent a pound in lead and five cents in silver attributed to foreign influences. Copper and zinc hold firm

New York — Advances of one cent a pound in the price of lead and of five cents perfine ounce in domestic silvers featured developments in the nonferrous metal markets last week. Demand for metals remained active while the price tone strengthened, due in large measure to the high price levels prevailing abroad.

COPPER — Apparently wanting to avoid, if possible, any action which would tend toward an increase in copper prices here, some move is expected shortly regarding distribution of metal still held by the government. Pending action on releasing this metal, most sellers are holding volume to a minimum with two prices still in effect. These are 20.50c and 19.50c, delivered Connecticut valley, for electrolytic while in the foreign market 21.00c, fas basis, held until late last week.

The British have increased the copper price £10, or around $40 per ton, making world price equivalent 22.85c a pound, London.

Failure to clarify uncertainty over import tariff has clouded the outlook for the March supply of copper. How metal will be moved to consumers and what terms involving tonnage imported since the first of the year on which the four-cent import duty would apply is subject to conjecture. This metal can be stockpiled, released to users at cost plus duty, or at about 21.50c a pound, or released as bonded copper. It still may be possible to waive the duty temporarily.

Consumption of copper by fabricators in January reached 139,263 tons, a new peacetime high. This compared with a revised December consumption figure of 124,432 tons. On Feb. 1, fabricators had 393,451 tons of refined copper on hand.

January deliveries amounted to 143,692 tons and of this total Metal Reserve supplied 59,396 tons. This tonnage was probably above actual needs of fabricators and other users as was the case in December. There is also some anticipatory buying in recent heavy trading against the time when Metals Reserve will fade out. From that source, nearly 35,000 tons were supplied in February, leaving less than 10,000 tons of duty-free metal for allocation in March, probably destined for hardship cases.

LEAD — Prominent sellers advanced lead prices one cent a pound on Feb. 25 to the basis of 14.00c, New York, and 13.80c, East St. Louis. Continued strength in foreign lead was a factor in this increase, American Smelting & Refining Co., in announcing the increase, said lead prices in the world market have advanced to the equivalent of the new domestic price when allowance is made for transportation costs and the United States import duty of 1 1/16-cents a pound. Furthermore, it is understood that there have been sales by others in the domestic market of imported primary lead at price susbtantially above the new 14-cent level. At present, foreign-produced lead is quoted at 12.50c a pound at Gulf of Mexico ports compared with a previous quotation of 12.00c.

More lead, notably scrap, is expected to come out following this increase in primary metal. Production of lead scrap has been upward for some weeks. Lead sheet and pipe also advanced one cent a pound last week.

ZINC—Prices of zinc remain stable with improvement in supply noted, although some grades are short, including prime western and special high grade. Prime western is quoted 10.50c, East St. Louis. Slab zinc production in November eased slightly to 74,630 tons fr 79,894 tons in the previous month. the November total, galvanizers t 30,316 tons; zinc-base alloys, 19,893 to

TIN — Bolivian officials are hold out for 76.00c per pound of tin c tained, fob South American ports, s negotiations on terms of sale on 1 tin concentrates have been deadlock Prices in the domestic market hold fi at 70.00c, ex-dock New York, in 5- lots.

SILVER—Buying of silver was act last week and prices advanced to 75.7 New York, a rise of five cents for period. According to Wall Street auth ities, a "fantastic" four-nation bank and foreign exchange deal drove price of silver higher on the mar here, side-stepping British governm foreign exchange control. India is to be the major source of heavy buyi Domestic industry and silverware mak also re-entered the market for t normal day-to-day needs.

QUICKSILVER — Prices for qu silver are unsettled at $86 to $90 per flask, depending on quantity.

WAA Offers 25,000 tons Prefabricated Bridge Part

Some 25,000 tons of component p for prefabricated V-type trestle bri that originally cost the government 108,000, are being offered on a se bid basis by the Cleveland office War Assets Administration. All bids r be in the hands of O. E. Tho Cleveland WAA regional d tor, by 2 p. m., Mar. 7. The br assemblies, located at Cambridge, will be sold in ten lots, each weig slightly under 2500 tons. The mat is suitable in some instances for br repairs, since each lot contains 1,600,000 assorted parts; or it also ma utilized in the present critical s shortage.

NONFERROUS METAL PRICES

: Electrolytic, carlots 19.50c-20.50c, del. Lake, 19.62½c, del. Conn. Dealers may c for 5000 lb to carload; 1c, 1000-4999 lb; 500-999 lb; 2c, 0-499 lb. Casting, 19.25c, y, 20,000 lb or more; 19.50c, less than lb.

Ingot: 85-5-5-5 (No. 115) 20.50c; 88-10-2 215) 24.75c; 80-10-10 (No. 305) 23.50c; yellow (No. 405) 16.25c; carlot prices, ng 25c per 100 lb freight allowance; add less than 20 tons.

Price western 10.50c, brass special 10.75c, ediate 11.00c, E. St. Louis; high grade del., carlots. For 20,000 lb to carlots 15c; 10,000-20,000 lb 0.25c; 2000-10,000 ; under 2000 lb 0.50c.

Common 13.80c, chemical 13.90c, corrod-.90c, E. St. Louis for carlots.

ry Aluminum: 99% plus, ingots 15.00c igs 14.00c del.; metallurgical 94% min. del. Base 10,000 lb and over; add ½c 999 lb; 1c less through 2000 lb.

dary Aluminum: Piston alloy (No. 122 16.37½c; No. 12 foundry alloy (No. 2 15.62½c; steel deoxidizing grades, notch granulated or shot: Grade 1 (95-97½%) ; grade 2 (92-95%) 16.00c; grade 3 %) 15.25c; grade 4 (85-90%) 14.75c. prices for 30,000 lb or more; add ¼c 30,000 lb; ½c 5000-10,000 lb; ¾c 1000-b; 1¼c less than 1000 lb. Prices include at carload rate up to 75c per 100 lb.

sium: Commercially pure (99.8%) stand-ngots (4-notch, 17 lb) 20.50c per lb, car-2.50c 100 lb to c.l. Extruded 12-in. sticks 38.00c.

Prices ex-dock, New York in 5-ton lots. cent for 2240-11,199 lb, 1½c 1000-2239, 500-999, 3c under 500. Grade A, 99.8% her (includes Straights), 70.00c; Grade 8% or higher, not meeting specifications Grade A, with 0.05% max. arsenic, ½c; Grade C, 99.65-99.79% incl. 69.62½c; D, 99.50-99.64% incl., 69.50c; Grade 99.49% incl. 69.12½c. Grade F, below for tin content), 69.00c.

ony: American bulk carlots fob Laredo, 99.0% to 99.8% and 99.8% and over but eeting specifications below, 28.25c; 99.8% ver (arsenic, 0.05% max.; other impuri-0.1% max.) 28.75c. On producers' sales ¼c for less than carload to 10,000 lb; r 9999-224 lb; and 2c for 223 lb and less; les by dealers, distributors and jobbers ½c, 1c, and 3c, respectively.

l: Electrolytic cathodes, 99.9%, base sizes nery, unpacked 35c lb; 25 lb pigs produced electrolytic cathodes 36.50c lb; shot pro-from electrolytic cathodes 37.50c lb; ickel shots or ingots for additions to cast 5.50c lb. Prices include import duty.

ry: Open market, spot, New York, $86-r 76-lb flask.

de: Prime, white, 99%, carlots, 4.00c lb.

illum-Copper: 3.75-4.25% Be, $14.75 per tained Be.

lum: Bars, ingots, pencils, pigs, plates, slabs, sticks, and all other "regular" ht or flat forms $1.50-$1.75 lb, del.; s, balls, discs and all other special or ed shapes, $1.55-$1.80.

t: 99-98%, $1.50 lb for 550 lb (keg); lb for 100 lb (case); $1.57 lb under 100

U. S. Treasury, $35 per ounce.

m: 99.9%, $2.25 per troy ounce.

: Open market, N. Y. 75.75c per ounce.

um: $58-$61 per ounce.

Palladium: $24 per troy ounce.

Iridium: $110 per troy ounce.

Rolled, Drawn, Extruded Products

(Copper and brass products prices based on 19.50c, Conn., for copper. Freight prepaid on 100 lb or more.)

Sheet: Copper 30.93c; Yellow brass 27.53c; commercial bronze, 95% 31.07c, 90% 30.56c; red brass, 85% 29.53c, 80% 29.02c; best quality 28.44c; Everdur, Duronze, Herculoy or equiv., cold-drawn, 35.79c; nickel silver, 18%, 39.82c; phosphor bronze, grade A, 5%, 48.82c.

Rods: Copper, hot rolled 27.28c, cold drawn 28.28c; yellow brass, free cutting, 22.28c, not free cutting 27.22c; commercial bronze, 95% 30.76c, 90% 30.25c; red brass, 85% 29.22c, 80% 28.71c; best quality 28.13c.

Seamless Tubing: Copper 30.97c; yellow brass 30.29c; commercial bronze 90% 32.97c; red brass 85% 32.19c, 80% 31.68c; best quality brass 30.85c.

Copper Wire: Bare, soft, fob eastern mills, carlots 25.52c, less carlots 26.02c; weatherproof, fob eastern mills carlot 26.42c, less carlots 26.92c; magnet, delivered, carlots 28.93c, 15,000 lb or more 29.18c, less carlots 29.68c.

Aluminum Sheets and Circles: 2s and 3s flat mill finish, base 30,000 lb or more del.; sheet widths as indicated; circle diameter 9" and larger:

Gage	Width	Sheets	Circles
.249"-7	12"-48"	22.70c	25.20c
8-10	12"-48"	23.20c	25.70c
11-12	26"-48"	24.20c	27.00c
13-14	26"-48"	25.20c	28.50c
15-16	26"-48"	26.40c	30.40c
17-18	26"-48"	27.90c	32.90c
19-20	24"-42"	29.80c	35.30c
21-22	24"-42"	31.70c	37.20c
23-24	3"-24"	25.60c	29.20c

Lead Products: Prices to jobbers: Full sheets 17.25c, 140 sq ft rolls; add per hundredweight, 25c, 80 to 140 sq ft; 50c, 20 to 80 sq ft; 75c, 10 to 20 sq ft.
Pipe: Full coils 16.50c; cut coils 16.75c.
Lead Traps and Bends: List plus 40%.

Zinc Products: Sheet, 15.50c, fob mill, 36,000 lb and over. Ribbon zinc in coils, 14.50c, fob mill, 36,000 lb and over. Plates, not over 12-in., 13.25-13.50c; over 12-in., 14.25-14.50c.

Plating Materials

Chromic Acid: 99.75%, flake, del., carloads, 20.00c; 5 tons and over, 25.00c; 1 to 5 tons, 21.00c; less than 1 ton, 21.50c.

Copper Anodes: In 500-lb lots, fob shipping point, freight allowed, cast oval, over 15 in., 36.87½c; flat untrimmed, 36.87½c; electro-deposited, 30.62½c.

Copper Carbonate: 52-54% metallic Cu, 250 lb barrels, nom.

Copper Cyanide: 70-71% Cu, 100-lb kegs or bbls, 41.50c fob Niagara Falls.

Sodium Cyanide: 96-98%, ½-oz balls, in 100 or 200 lb drums, 1 to 400 lb, 16.00c, 500 lb and over, 15.00c, fob Cleveland; 1 cent less, fob Niagara Falls.

Nickel Anodes: Cast and rolled carbonized, carloads, 48.00c; 10,000 to 30,000 lb, 49.00c; 30,000 to 10,000 lb, 50.00c; 500 to 3000 lb, 51.00c; 100 to 500 lb, 53.00c; under 100 lb, 56.00c; add 1 cent for rolled depolarized.

Nickel Chloride: 100-lb kegs, 22.00c; 275-lb bbls, 22.00c.

Tin Anodes: Bar, 1000 lb and over 82.50c; 500 to 1000 lb, 83.00c; 200 to 500 lb, 83.50c; less than 200 lb, 84.00c; ball, 1000 lb and over, 84.75c; 500 lb to 1000 lb, 85.25c; 200 to 500 lb, 85.75c; less than 200 lb, 86.25c, fob Sewaren, N. J.

Tin Chloride: 400 lb bbls, nom., fob Grasselli, N. J.; 100 lb kegs, nom.

Sodium Stannate: In 100 or 200 lb. drum, 49.00c; 4 to 11 kegs, 47.00c; 12 to 20 kegs, 44.30c; 21 kegs and over, 43.50c; in 350-lb bbl, 46.50c; 4 to 5 bbls, 43.80c; 6 bbls and over, 43.00c; fob Chicago, freight allowed east of Mississippi on 100 lb and over.

Zinc Cyanide: 100-lb drums, 35.00c, fob Cleveland; 34.00c, fob Niagara Falls.

Scrap Metals

BRASS MILL ALLOWANCES

Prices for less than 15,000 lb fob shipping point. Add ⅝c for 15,000-40,000 lb; 1c for 40,000 or more.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	17.125	17.125	16.375
Yellow brass	13.750	13.250	12.875
Commercial Bronze			
95%	15.875	15.625	15.125
90%	15.750	15.500	15.000
Red brass			
85%	15.500	15.250	14.750
80%	15.375	15.125	14.625
Best Quality (71-79%)	14.625	14.375	.....
Muntz metal	12.875	12.625	12.125
Nickel silver, 5%	14.500	14.250	7.250
Phos. bronze, A. B.	18.125	17.875	16.875
Naval brass	13.250	13.000	12.500
Manganese bronze	13.250	13.000	12.375

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, fob shipping point, carload lots)

No. 1 copper 17.00, No. 2 copper 16.00, light copper 15.00, composition red brass 16.00, auto radiators 13.00, heavy yellow brass 11.50, brass pipe 12.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper, 18.50c; No. 2 copper, 17.25c; light copper, 16.25c; refinery brass (60% copper), per dry copper content, 15.62½c.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots or more)

Copper and Brass: Heavy copper and wire, No. 1 15.50-16.00; No. 2 14.50-15.00; light copper 13.50-14.00, No. 1 composition red brass 14.00-14.50, No. 1 composition turnings 13.00-13.50, mixed brass turnings 9.50-10.00, new brass clippings 13.00-13.50, No. 1 brass rod turnings 11.75-12.25, light brass 8.00-8.50, heavy yellow brass 10.00-10.50, new brass rod ends 12.00-12.50, auto radiators, unsweated, 11.00-11.50, clean red car boxes 12.50-13.00, cocks and faucets 11.75-12.00, brass pipe 11.50-11.75.

Lead: Heavy lead 11.50, battery plates 6.75, linotype and stereotype 14.00, electrotype 12.00, mixed babbitt 12.50, solder joints 14.00.

Zinc: Old zinc 5.50-6.00, new die cast scrap 5.50-6.00, old die cast scrap 4.00-4.50.

Tin: No. 1 pewter 44.00-45.00, block tin pipe 60.00-62.00, auto babbitt 35.00-36.00, No. 1 babbitt 35.00-38.00, siphon tops 38.00-40.00.

Aluminum: Clippings, 2S, 9.50-10.00, old sheets 7.50-8.00, crankcases 7.50-8.00, turnings 3.00, pistons, free of struts, 6.75-7.00.

Nickel: Anodes 19.50-20.50, turnings 16.50-17.50, rod ends 19.00-20.00.

Monel: Clippings 14.00-15.00, turnings 9.00, old sheet 12.00-13.00, rods 12.50-13.00, castings 10.00.

OPEN MARKET PRICES, IRON AND STEEL SCRAP

Prices are dollars per gross ton, including broker's commission, delivered at consumer's plant except where noted.

*PITTSBURGH:

No. 1 Heavy Melt. Steel	$35.00
No. 2 Heavy Melt. Steel	35.00
No. 1 Busheling	35.00
Nos. 1, 2 & 3 Bundles	35.00
Machine Shop Turnings	28.50-29.50
Mixed Borings, Turnings	28.50-29.50
Short Shovel Turnings	30.00-31.00
Cast Iron Borings	29.00-30.00
Bar Crops and Plate	38.00-39.00
Low Phos. Cast Steel	38.00-39.00
Punchings & Plate Scrap	38.00-39.00
Elec. Furnace Bundles	36.00-36.50
Heavy Turnings	34.00-34.50
Alloy Free Turnings	34.00-34.50
Cut Structurals	38.00-38.50
No. 1 Chemical Borings	33.50-36.50

Cast Iron Grades

No. 1 Cupola	42.00-43.00
Charging Box Cast	38.00-38.50
Heavy Breakable Cast	35.50-36.50
Stove Plate	42.00-43.00
Unstripped Motor Blocks	40.50-41.50
Malleable	45.00-46.00
Brake Shoes	31.00-34.50
Clean Auto Cast	46.00-48.00
No. 1 Wheels	40.00-41.00
Burnt Cast	35.00-36.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	35.00
R.R. Malleable	45.00-46.00
Axles	41.00-42.00
Rails, Rerolling	38.00-39.00
Rails, Random Lengths	35.50-38.00
Rails, 3 ft and under	37.50-41.50
Rails, 18 in. and under	38.75-43.00
Railroad Specialties	38.50-42.50
Uncut Tires	38.50-40.50
Angles, Splice Bars	37.00-42.00

* Prices for steelmaking grades from remote points range up to $40, including $7 to $8 freight.

CLEVELAND:

No. 1 Heavy Melt. Steel	$32.50
No. 2 Heavy Melt Steel	32.50
No. 1 Busheling	32.50
Nos. 1 & 2 Bundles	32.50
Machine Shop Turnings	27.50
Mixed Borings, Turnings	27.50
Short Shovel Turnings	28.00
Cast Iron Borings	25.50-26.50
Bar Crops and Plate	35.00
Cast Steel	35.00
Punchings & Plate Scrap	35.00
Elec. Furnace Bundles	33.50
Heavy Turnings	30.00
Alloy Free Turnings	28.50
Cut Structurals	35.00
No. 1 Chemical Borings	29.50

Cast Iron Grades

No. 1 Cupola	46.00
Charging Box Cast	42.00
Heavy Breakable Cast	44.00-46.00
Stove Plate	40.00
Unstripped Motor Blocks	42.00
Malleable	44.00-46.00
Brake Shoes	35.00
Clean Auto Cast	45.00
No. 1 Wheels	38.00
Burnt Cast	34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	32.50
R. R. Malleable	45.00
Rails, Rerolling	35.00-36.00
Rails, Random Lengths	38.00-39.00
Rails, 3 ft and under	39.00
Railroad Specialties	30.50
Uncut Tires	36.50
Angles, Splice Bars	28.50

VALLEY:

No. 1 Heavy Melt. Steel	$35.00
No. 2 Heavy Melt. Steel	35.00
No. 1 Bundles	35.00
Machine Shop Turnings	29.00
Short Shovel Turnings.	30.00
Cast Iron Borings	29.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	35.00

MANSFIELD:

No. 1 Heavy Melt. Steel	$35.00
Machine Shop Turnings	30.00
Short Shovel Turnings	32.00

CINCINNATI:

No. 1 Heavy Melt. Steel	$34.00-35.00
No. 2 Heavy Melt. Steel	34.00-35.00
No. 1 Busheling	34.00-35.00
No. 1 Bundles	34.00-35.00
No. 2 Bundles	34.00-35.00
Machine Shop Turnings.	25.00
Mixed Borings, Turnings	23.00
Short Shovel Turnings.	26.00
Cast Iron Borings	26.00

Cast Iron Grades

No. 1 Cupola Cast	42.00
Charging Box Cast	35.00
Heavy Breakable Cast.	37.00
Stove Plate	32.00
Unstripped Motor Blocks	32.00
Brake Shoes	28.00
Clean Auto Cast	40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	34.00-35.00
R.R. Malleable	45.00
Rails, Rerolling	40.00
Rails, Random Lengths.	40.00
Rails, 18 in. and under.	45.00

DETROIT:

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$30.50-31.00
No. 1 Busheling	30.50-31.00
Nos. 1 & 2 Bundles	30.50-31.00
No. 3 Bundles	30.50-31.00
Machine Shop Turnings.	23.50-24.00
Mixed Borings, Turnings	23.50-24.00
Short Shovel Turnings.	24.50-25.00
Cast Iron Borings	24.50-25.00
Punchings & Plate Scrap	33.00-35.00
Elec. Furnace Bundles.	32.00

Cast Iron Grades

No. 1 Cupola Cast	$39.00-41.00
Heavy Breakable Cast.	32.00-34.00
Clean Auto Cast	39.00-41.00

BUFFALO:

No. 1 Heavy Melt. Steel	$35.00
No. 2 Heavy Melt. Steel	35.00
No. 1 Busheling	35.00
Nos. 1 & 2 Bundles	35.00
No. 3 Bundles	30.00-31.00
Machine Shop Turnings	28.00-29.00
Mixed Borings, Turnings	28.00-29.00
Short Shovel Turnings	30.00-31.00
Cast Iron Borings	27.00-28.00
Punchings & Plate Scrap	36.00-38.00
Elec. Furnace Bundles	35.50-36.50
Alloy Free Turnings	33.00-34.00

Cast Iron Grades

No. 1 Cupola Cast	38.00-42.00
Charging Box Cast	36.50-38.50
Stove Plate	38.00-40.00
Malleable	40.00-42.00
Clean Auto Cast	38.00-42.00
No. 1 Wheels	38.00-40.00

PHILADELPHIA:

No. 1 Heavy Melt. Steel	$35.00-36.00
No. 2 Heavy Melt. Steel	35.00-36.00
No. 1 Busheling	35.00-36.00
Nos. 1 & 2 Bundles	35.00-36.00
No. 3 Bundles	32.00-33.00
Machine Shop Turnings	28.00-28.50
Mixed Borings, Turnings	27.50-28.00
Short Shovel Turnings.	28.00-28.50
Cast Iron Borings	28.00-28.50
Bar Crops and Plate	39.00-39.50
Cast Steel	39.00-39.50
Punchings & Plate Scrap	39.00-39.50
Elec. Furnace Bundles	37.50-38.00
Heavy Turnings	35.00-36.00
Cut Structurals	37.50-38.00
No. 1 Chemical Borings.	34.00-35.00

Cast Iron Grades

No. 1 Cupola Cast	48.00-49.00
Charging Box Cast	44.50-45.00
Heavy Breakable Cast.	44.50-45.00
Unstripped Motor Blocks	42.00
Malleable	49.00-50.00
Clean Auto Cast	46.00-47.00
No. 1 Wheels	46.00-47.00

NEW YORK:

(Dealers buying prices, fob shipping point)

No. 1 Heavy Melt. Steel	$33.00
No. 2 Heavy Melt. Steel	33.00
No. 1 Busheling	33.00
Nos. 1 & 2 Bundles	33.00
No. 3 Bundles	31.00
Machine Shop Turnings	25.00
Mixed Borings, Turnings	25.00
Short Shovel Turnings	26.00
Punchings & Plate Scrap	35.00
Elec. Furnace Bundles.	34.00-35.00
Cut Structurals	35.00
No. 1 Chemical Borings	25.00

Cast Iron Grades

No. 1 Cupola Cast	41.00-41.50
Charging Box Cast	40.00-41.00
Unstripped Motor Blocks	39.00-40.00
Malleable	43.00-44.00

BOSTON:

(Fob shipping point)

No. 1 Heavy Melt. Steel	$31.00-32.00
No. 2 Heavy Melt. Steel	31.00-32.00
No. 1 Busheling	31.00-32.00
Nos. 1 & 2 Bundles	31.00-32.00
No. 3 Bundles	25.00-26.00
Machine Shop Turnings.	24.00-25.00
Mixed Borings, Turnings	23.00-24.00
Short Shovel Turnings	26.00-27.00
Cast Iron Borings	25.00-26.00
Bar Crops and Plate	32.50-33.50
Cast Steel	29.35-29.85
Punchings & Plate Scrap	32.50-33.50
Elec. Furnace Bundles	30.00
Heavy Turnings	30.00
Alloy Free Turnings	26.00
Cut Structurals	29.00
No. 1 Chemical Borings	26.00-27.00

Cast Iron Grades

No. 1 Cupola Cast	44.00-46.00
Charging Box Cast	40.00-41.00
Heavy Breakable Cast.	42.00-44.00
Stove Plate	39.00-40.00
Clean Auto Cast	42.00-44.00

CHICAGO:

No. 1 Heavy Melt. Steel	$32.50
No. 2 Heavy Melt. Steel	32.50
Nos. 1 & 3 Bundles	32.50
No. 3 Bundles	30.50
Machine Shop Turnings	27.00-28.00
Mixed Borings, Turnings	27.00-28.00
Short Shovel Turnings	28.00-29.00
Cast Iron Borings	28.00-29.00
Bar Crops and Plate	35.00
Cast Steel	35.00
Punchings	35.00
Elec. Furnace Bundles.	33.50
Heavy Turnings	32.00
Cut Structurals	35.00

Cast Iron Grades

No. 1 Cupola Cast	40.00-45.00
Malleable	40.00-45.00
Clean Auto Cast	35.00-40.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	33.50
Rails, Rerolling	38.00-39.00
Rails, Random Lengths	37.00-38.00
Rails, 3 ft. and under	40.00-41.00
Rails, 18 in. and under	41.00-42.00
Railroad Specialties	37.00-39.00
Angles, Splice Bars	36.00-38.00

ST. LOUIS:

No. 1 Heavy Melt. Steel	$32.25-33.00
No. 2 Heavy Melt. Steel	32.25-33.00
Machine Shop Turnings	27.25-27.75
Short Shovel Turnings	29.25-29.75

Cast Iron Grades (Fob shipping point)

No. 1 Cupola Cast	35.00-37.00
Charging Box Cast	30.00-35.00
Heavy Breakable Cast	30.00-32.00
Stove Plate	29.00-34.00
Brake Shoes	28.7
Clean Auto Cast	35.0
No. 1 Wheels	34.5
Burnt Cast	25.0

Railroad Scrap

R.R. Malleable	41.0
Rails, Rerolling	40.0
Rails, Random Lengths	37.0
Rails, 3 ft. and under	40.0
Uncut Tires	34.5
Angles, Splice Bars	37.0

BIRMINGHAM:

No. 1 Heavy Melt. Steel	$32.5
No. 2 Heavy Melt. Steel	32.5
No. 1 Busheling	32.5
Nos. 1 & 2 Bundles	32.5
Long Turnings	23.0
Short Shovel Turnings	27.5
Cast Iron Borings	22.0
Bar Crops and Plate	34.0
Punchings & Plate Scrap	34.0
Cut Structurals	34.0

Cast Iron Grades

No. 1 Cupola Cast	39.0
Stove Plate	35.0
No. 1 Wheels	38.0

Railroad Scrap

No. 1 R.R. Heavy Melt	29.5
R.R. Malleable	37.5
Axles, Steel	35.5
Rails, Rerolling	41.0
Rails, Random Length	38.0
Rails, 3 ft. and under	36.0
Angles and Splice Bars	37.0

SAN FRANCISCO:

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt. Steel	
No. 1 Busheling	
Nos. 1 & 2 Bundles	
No 3 Bundles	
Machine Shop Turnings	
Bar Crops and Plate	
Cast Steel	
Alloy Free Turnings	
Cut Structurals	20.0
Tin Can Bundles	

Railroad Scrap

Axles	
Rails, Random Lengths	
Uncut Tires	

* Fob California shipping p

SEATTLE:

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt. Steel	
No. 1 Busheling	
Nos. 1 & 2 Bundles	
No. 3 Bundles	
Machine Shop Turnings	
Mixed Borings, Turnings	
Punchings & Plate Scrap	
Cut Structurals	

Cast Iron Grades

No. 1 Cupola Cast	
Charging Box Cast	
Heavy Breakable Cast	
Stove Plate	
Unstripped Motor Blocks	
Malleable	
Brake Shoes	
Clean Auto Cast	
No. 1 Wheels	

Railroad Scrap

No. 1 R. R. Heavy Melt	
Railroad Malleable	
Rails, Random Lengths	
Angles and Splice Bars	

LOS ANGELES:

No. 1 Heavy Melt. Steel	
No. 2 Heavy Melt Steel	
Nos. 1 & 2 Bundles	
Machine Shop Turnings	
Mixed Borings, Turnings	

Cast Iron Grades

No. 1 Cupola Cast	

eets, Strip . . .

Producers rationing sheets for se in housing projects more cautiously

Sheet & Strip Prices, Page 190

ew York—An increasing number of t producers are requesting customers, stand to benefit under the voluntary ning program being set up for sec- quarter to handle housing require- ts, to supply details as to the end uct. Various consumers have re- ements for other than housing, and mills, while realizing they cannot police the situation, wish to take y reasonable precaution to see that tonnage being rationed is for legi- te housing requirements and nothing

here it is shown quotas already set vill not be sufficient to meet these l requirements, they are promising rovide relief.

meeting these housing requirements, e sellers voluntarily will endeavor estrict their tonnage closely to the ls of their own regular customers, not necessarily provide consumers only recently have been added to list by virtue of mandatory priori- This would seem to leave some umers in a rather open position. rever, most consumers have regular ces of supply, and as the mills are ing every effort to meet their hous- needs, many should not be too hard

he list of housing requirements for second quarter has been modified ewhat, especially with respect to r-sink cabinets which in the past been requiring a relatively sub- ial amount of sheets and which after current period will be dropped en- y.

creasing caution in the rationing of ing steel is being traced to the fact a certain amount of the steel al- ted for the housing program is find- its way into the black market. ous evidences of this have come to fairly recently. One large mill re- ly had its attention called to a ton- of enameling sheets of its own e, which was being offered in the k market. This producer was able lentify it as something delivered less six weeks previously, and, interest- , to a consumer who was not among egular customers, but who had been to get the steel under a govern- t priority.

ston—Confusion as to base prices, charges and other services, includ- coil weight charges, has not been d out in narrow cold strip. Con- rs buying from several producers illed as many prices and are unable equently to accurately measure steel . Buying, however, is largely on livery basis with prices secondary he moment. Some producers of nar- cold-rolled strip have not split car- ranges into new categories and are g under the old range. Up to now, ly of high carbon hot strip has been r than that for low carbon, but the er is tightening and in a few in- es rerollers note a slight improve- in low carbon. Where some of heets originate that are being offered gh premium prices by brokers and dary handlers is a mystery. Scat- sizable lots are offered with prices ranging up to 14.00c a pound for car- bon sheets.

Philadelphia — Sheet producers de- clare that the shortage of cars is prov- ing to be the major bottleneck in mak- ing deliveries. Not only are incoming shipments of raw materials being restrict- ed, thus limiting production (with pro- ducers emphasizing that the stringency is not altogether due to a basic short- age of these materials), but also the move- ment of tonnage actually being produced. Few if any companies, it is said, are able to ship tonnage promptly, with re- cent snow storms adding to the trans- portation problem. Meanwhile, demand shows no signs of a let-up, with require- ments expected to run ahead of output for the remainder of the year, and prob- ably longer.

Chicago — The picture as to sheets and strip changes little from that which has prevailed for many weeks. Mill pro- duction is at high level, but falls far short of meeting demands. Producers are able to pick up ground on their heavy back- logs. Consumers appear to feel that with steelmaking continuing to hold at 92 per cent of capacity they should be witnessing an increase in shipments. Some even press for increased allotments, which, of course, are not forthcoming.

Cincinnati—District sheet mills are holding to a previously established policy by which allocations are made quarter by quarter. Nevertheless, many custom- ers continue to urge extended delivery promises. Quotas for second quarter tend heavier for regular customers but there is no relaxing of pressure for more ton- nage. Carryover of hot-rolled will be proportionatelly larger than in cold- rolled.

St. Louis— Sheet producers are await- ing effect of the termination of pig iron allocations and hope it may ease the squeeze they're suffering on scrap prices. Pig content of the mix long ago was cut to 17 to 20 per cent instead of the former 25 per cent. If pig supplies will moderate the pressure on scrap, melters believe quality of scrap will improve. Mills recently have complained scrap is low grade and light, which reduces open hearth output. So far this has largely offset a notable pickup in finishing worker efficiency. Flat steel production has remained at a high level following a sharp improvement in January. Pres- sure for sheets is unabated. Housing de- mand is growing but there is no indica- tion sheet tonnage can be increased before May, when a new cold rolling mill is scheduled for completion. Books for 1947 remain closed.

Metallurgical Coke . . .

Coke By-Product Prices, Page 191

Pittsburgh — A further advance in Connellsville foundry beehive coke de- veloped recently. The increase amounts to $1 on the higher side of the price range, making the price spread $9.75 to $11. Shortage of coke and pig iron has been alleviated somewhat by scarcity of industrial gas which has resulted in sharp curtailment of foundry operations. How- ever, the general coke supply situation is expected to remain tight through remain- der of this year, with the freight car shortage a contributing factor. Active bidding for limited foundry coke supply from automotive foundries outside this district further accentuates the tight sup- ply condition.

Steel Bars . . .

Inquiries remain light, due chiefly to high cost of labor; supply of larger sizes easier

Bar Prices, Page 190

New York—Small carbon rounds and flats remain extremely scarce, with little change in second quarter allotments. However, on the larger sizes, 3½ inches and over in the hot rolled bars and 1 inch and over in the cold drawn bars, there is a noticeable easing, and there is a disposition on some of these sizes for producers to accept tonnage beyond the end of the second quarter. Alloy bar deliveries continue easy, with at least one mill able to promise four weeks de- livery on almost any specification of hot alloy required.

Chicago—Bar makers are noticing a general slackening in demand for large bar sizes, but for the smaller sizes pres- sure is tremendous. There is some activity observed in trading alloy and stainless bars for carbon grades, the former being in comparatively easy sup- ply. Forge shop operations vary widely. Some upset shops are able to run only four days a week because of business volume. In some outlying districts, how- ever, forging shops are limited in their production only by their ability to ob- tain steel.

Boston—Only easy spots in bars are alloys and larger sizes of carbon, notably cold-drawn 1½-inch and over Some pro- ducers are relatively well sold on cold- drawn alloys in small sizes and maintain quotas. Hot-rolled carbon bar schedules and allocations in the second quarter will be affected by carryovers in most cases. Most bar consumers have asked for heavier tonnages in the second quar- ter without material success. Ware- houses are specifying merchant quality in carbon grades in higher ratio, although with application generally fixing extras confusion as to billings is becoming clarified.

Philadelphia — Of all major products, bars appear to be the only item to show any easing in supply, and even then in the smaller sizes the situation seems about as tight as ever. Eventually, the softer trend in the larger specifications will improve the position in the smaller, but that seems to be at least a few months away. Forgers, bolt and nut makers, and jobbers say they have seen little improvement in their second quar- ter quotas of the smaller ranges, this ap- plying to cold-drawn as well as hot- rolled carbon bars. In alloys, deliveries continue easy in all sizes. Some mills can still make shipments of hot alloys within a month.

Champion Rivet Co. Revises Schedule of Rivet Extras

Champion Rivet Co., Cleveland, has issued a new schedule of extras covering all sizes of rivets made by that company. The company has made a general adjust- ment in its extras for diameter, heads, length, special packing, annealing, speci- fications and inspection, quantity, toler- ance, etc. to take care of the new bar extras which were recently established by the steel mills.

Plates . . .

Plate Prices, Page 191

Philadelphia — Plate producers continue under heavy pressure, with demand in excess of production. One district mill is out of the market for the next seven months and another is practically out for the remainder of the year, meanwhile cutting back on commitments already made. Mills, selling on a quarterly quota basis, will go into next quarter with a carryover averaging more than a month's production and with increased railroad equipment allotments forcing a curtailment of quotas to other consumers. Shortage of raw materials, particularly pig iron, is restricting production.

On widths up to and including 48 inches, flat-rolled steel 0.230-inch and heavier in thickness now falls within the plate range, compared with ¼-inch and heavier previously; and on widths over 48 inches, 0.180-inch and heavier, against 3/16-inch and heavier.

New York—In point of stringency, plates appear second only to sheets and strip. Notwithstanding the sharp decline in shipbuilding there are sufficient requirements in other directions to more than consume such tonnage as is now being produced. The recent strong upsurge in freight car buying is adding to the burdens of plate producers and, were sufficient wheels available or in sight, the burden probably would be further increased, since car production schedule would be raised from around 7000 per month, to around 10,000 month. Plate producers generally are well behind on commitments.

Pittsburgh—Geneva Steel Co. is sc uled to start initial shipments Jun on a 275,000-ton plate contract to solidated Steel Corp., Los Angeles, fabrication into pipe for the 1000-Trans-Arabian pipe line. Despite ceptionally good plate output, little h way has been made against order b logs recently. Fabricators are well hind projected production schedules to scarcity of steel. The revised fre car construction program is expecte result in further delay in mill shipm to tank and miscellaneous fabricato

Boston — Although mainly ton overdue, fabricators of heavier pl including weldment shops, are ge slightly more steel. Combination of building requirements and produc losses in some cases continues the s gency in lighter gages, notably 3 inch. Small tank shops are not plagued by lack of plates, but also striking a balance in heads. A builder of textile mill equipment is pected to use weldments for mac bases. Shipyard requirements are sl but miscellaneous industrial deman maintained and buying by the latte keeping warehouse inventories dow

Chicago—Diversion of significant nages of plates for the railroad building program starting in Apri creating a critical situation for fabricators and press manufacturers ready far short in having their n satisfied. Some tank manufacturers purchased floor plates for tank struction as an emergency measure. tern side of plates is turned in. understood Kansas City Municipal W Works is preparing to build a line which will require about 5000 of plates. Much work in replacem and extensions is being held up by lic utilities because of pipe shortage

Wire . . .

Wire Prices, Page 191

Pittsburgh—Sellers report no e in demand for manufacturers wire merchant wire products. Producers the supply situation will remain tight through balance of this year, add that distribution will continu a strict allocation basis into 1948. S major steel consumers, finding their contractors cannot obtain sufficient to maintain a high operating level, exerted additional pressure on their mill source and, in some instances, purchased steel at exorbitant prices brokers to meet their expanding ste quirements.

Industrial gas shortage forced a curtailment in wire production in district last week. American Ste Wire Co.'s wire rod mill was down greater part of the week and a nu of other rolling mills were similarl fected.

American Steel & Wire Co. ha minated Cleveland as a price bas merchant trade items, with excepti annealed and galvanized merchant and weaving wire. Another produ reported to have established a base on nails at Cleveland of $3.85 pe pounds.

Boston—Outlook for an improved ply of rods is dim for the second ter. Not only are nonintegrated mi

d of better balance in rod inventories, most industrial consumers drawing r own wire, which includes a substial number of screw manufacturers, also short. This is partially made up buying of drawn wire, but gaps in stocks prevent acceptance of some s and grades in small fastenings. re are a few soft spots in wire, ever, with supply well up to demand, bly in rope wire, most alloys, inling stainless and a few others, but high and low carbon specialties are through next quarter on many items.

eeking a higher appropriation, work the aerial tramway, Palm Springs, if., has been postponed. American el & Wire Co. has the contract for cable and wire work, prime contracbeing Consolidated Steel Co., Los geles. This tramway will be the gest ever built with a main cable 2½hes in diameter; pulling cable, 1½hes. Capacity of cars will be 400 per r each way.

Washington—A new item in steel prods demand abroad was occasioned by outbreak of hoof-and-mouth disease ong cattle in Mexico, which will necesite an extra 12,000 tons of barbed wire cing.

Chicago—Consumers of manufacturers des of wire are becoming more ective; whereas formerly they were ling to accept substitutes, they are w insisting upon grades specified. Alough production of medium and small es of nails is at high volume, demand eeds supplies, customers pressing for ger deliveries than can be given. Reirements for wire rope are growing l users have effected considerable rection in their inventories. Supply of ce posts falls far short of meeting uirements. Wiremakers have heavy cklogs for electrical wire and cable l are booking new business sparingly. erican Steel & Wire Co. was forced close down its Waukegan, Ill., plant days last week because shortage of k cars prevented delivery of butane ded for operations.

Birmingham—Wire products are genlly exceedingly scarce. Some tonnage ves regularly, of course, to retail outs but, except in the case of wire fenc which apparently has developed in tter supply, wire specifications are in ch greater demand than supply. This especially true of nails and, in most tances, barbed wire.

in Plate . . .

Tin Plate Prices, Page 191

New York—Tin plate producers will hard pressed in getting out the sec-l quarter export quota. Already well nind on their export commitments, cern producers, in fact, are much inested in seeing for sure whether mantory priorities are going to prevail the second quarter, indicating that this estion may have bearing on their own port policy in that period. Should the ond War Powers Act be permitted to minate Mar. 31, it would automatic-y cancel, it is said, the Export Control t which is now scheduled to expire ne 30.

Complications, such as fuel and car rtages, forced tin plate producers to ry over into the current quarter 75,000 ns of their 136,000 tons of export alations in the fourth quarter. Certain of these complications still prevail, particularly car shortages. Handling of 120,000 tons for foreign shipment in the second quarter presents a special problem in view of the seasonal upswing in domestic requirements.

Of the 120,000 tons of tin plate named for foreign shipment in the second quarter, 65,000 tons are wanted for delivery in April and May. This tonnage was named only a short while ago for shipment in the current period in addition to 55,000 tons which had been previously allotted. However, by the time details could be worked out it became obvious that it was too late to include the second allotment in current schedules. Of this 65,000 tons, 58,500 are scheduled at present to move under mandatory priority with remainder to be shipped to meet certain oil company requirements abroad on a voluntary basis.

The OIT had originally asked, and only recently, for 140,000 tons in the second quarter, in addition to the 65,000 tons.

With the 75,000 ton carryover from last quarter and the 55,000 tons subsequently allotted, total export requirement for the first three months stand at 130,000 tons. However, it is believed that tin plate producers will not be able to deliver more than 114,000 tons making for a carryover of approximately 16,000 tons.

Washington—Export of 110,000 tons of tin plate in the second quarter, to be used for the preservation of perishable

foods, has been authorized by the Civilian Production Administration. This quantity may be secured by priority ratings and is 14,000 tons less than the quota for priority exports during the first quarter.

Office of International Trade also has been authorized to issue export licenses for an additional 10,000 tons of tin plate, which may not be secured with the aid of ratings.

The second quarter total of 120,000 tons, rated and nonrated, includes the 65,000 tons that was allocated in the advance during January in order that it could be placed on the mill order books for export in April and May. It is expected that the balance of the allocation will be in time to be placed in the mills' delivery schedules for May and June.

This authorization is the result of a drastic screening of foreign requirements and is regarded by CPA as the minimum necessary to meet absolutely essential requirements abroad. Foreign claimants had indicated they would require 140,000 tons of tin plate during the second quarter, including 300 tons of tin plate for Iceland for containers.

Tubular Goods . . .

Tubular Goods Prices, Page 191

New York — Approximately 300,000 tons of 30 to 31-inch fabricated steel pipe for a 1000-mile line across Arabia has been placed by the Trans-Arabian Pipe Line Co., owned by the Arabian American Oil Co. Plates for the pipe will be produced by United States Steel Corp.'s Geneva works in Utah for fabrication by the Consolidated Steel Corp., Los Angeles. Delivery of the pipe is expected to start next fall.

Plans for the line have been under discussion for more than two years and some of the right of way has been obtained; however, it is said, the Mediranean terminus has not yet been deci upon.

Texas Pipe Line Co. and Shell Line Corp. plan to construct a 500-m crude oil carrier having a normal ca ing capacity of 150,000 barrels d The pipe line would run from the mian Basin of west Texas and so eastern New Mexico to Cushing, O Plans call for completion during the six months of 1948. This 500-mile cr oil pipe line will require about 116 tons of 20, 22 and 24-inch pipe. A Smith Corp., Milwaukee is reported have been awarded the contract for line.

Meanwhile the Trans-Continental Line Co., Austin, Tex., is renewing application to the Federal Power C mission for permission to build a 1 mile natural gas pipe line from so west Texas to the Philadelphia-New area, at a cost of approximately million. The Magnolia Pipe Line Houston, Tex., also contemplates panding its pipe line system betw Beaumont, Houston, Waco, Dallas Fort Worth, Tex.

Pittsburgh—The Justice Departm disapproval of the proposed sale of C solidated Steel Corp., Los Angeles U. S. Steel Corp., closely followed announcement that Consolidated fabricate 1000 miles of 30-inch pipe the Trans-Arabian pipe line.

Reinforcing Bars . .

Reinforcing Bar Prices, Page 190

New York — While relatively little inforcing steel tonnage has been pla here recently, certain important jobs becoming more active. These inc the Marcy housing project in Brook involving 4000 tons and for which general contract has been placed the Cauldwell-Wingate Co., 101 avenue, this city, and the veterans' pital at Peekskill, N. Y., one cont involving 1800 tons going to Me Chapman & Scott Corp., 17 Ba Place, New York, and another, invol at least 500 tons going to Fred Br erton, Hackensack, N. J. There is some fair sized miscellaneous ton involved in veterans' hospitals in Br lyn, Buffalo and Albany, which to be constructed primarily of sh

There is still a marked scarcity o inforcing steel, although the situa does appear slightly easier. Some ects now being delayed are said t held up as much by cost of labor a any other one factor.

Chicago — Reinforcing steel busi is inactive, except for work invol only a few tons. Supply of steel i thin few large jobs can be accomm ed anyway and, fortunately, few in classification are coming out for Welded mesh is being consumed more rapid rate than it can be furni by makers and backlogs are substa On the other hand, mills have some s openings for paving mesh. Nume concrete pipe jobs likely will be co out in the future.

Seattle—Reinforcing bar mills cont steady operations, resulting in a re tion in order backlogs. New busine being taken in increasing volume, erence being given to regular custo and emergency public works. M projects are crystallizing in spite o creased costs and a heavy volum orders is expected during the year.

uctural Shapes . . .

Structural Shape Prices, Page 191

w York — Bethlehem Steel Co., chem, Pa., is low on 6600 tons of es for the proposed veterans' hospi- t Fort Hamilton, Brooklyn, N. Y. fabricator, as noted in last week's , was also low on 5200 tons for a ans' hospital in Buffalo, while Har- tructural Steel Co., New York, was on a similar sized veterans' hospital bany, N. Y. Another large veterans' tal is being planned for Essex coun- New Jersey. It will be a 14-story ture, with the likelihood that struc- shapes will be required.

ston—Authorization for erection of John Hancock Insurance Co. build- to require about 9000 tons of steel, been granted by the Civilian Pro- ion Administration. Earlier an- cement by the owners had this sup- ucture work postponed. Contract ld for fabricating and erection by lehem Steel Co., Bethlehem, Pa. and an award of about 2000 tons warehouse in Worcester, Mass., ac- t for bulk of activity in the struc- market. Several hundred tons also be fabricated by Belmont Iron ks, Eddystone, Pa., for building for santo Chemical Co., Springfield, s., steel being let direct by the owner. ings for small projects are slower. le one structural mill has increased e quotas for the next quarter, over- supply of plain material continues .

hicago — Lack of steel aggravated the fact that an important producer apes in the East has withdrawn from area is operating to force fabricators extending their schedules. Large ding projects attract little interest erally, fabricators preferring to book the smaller jobs, particularly those inating from contractors and indus- interests served over long periods. only new large inquiry is for 2000 for a new aluminum die casting t in a Chicago suburb. Department of lic Works, Chicago, is asking for bids .7 on 613 tons of miscellaneous tural steel, consisting of channels, es, sheared plates, I-beams and flats, few suppliers evince much interest.

rmingham — Shape production is ing close to full capacity and, as a t, supply is best in some months. ellaneous building permits show a derable increase over the same d last year, but most projects are ively small in scope, many of the r ones being held in abeyance and, some instances, being completely doned.

attle—Several major projects involv- shapes are pending. Inquiry con- s strong but plants are severely icapped by lack of materials. The tion has not improved as mills are g behind schedules in delivery of ations which are well below the of this area.

rehouse . . .

Warehouse Prices, Page 193

itsburgh — To avoid mill extras, distributors are revising ordering ications in regard to packaging, ities and dead length in bars. Ware- s, for example, are ordering cold-finished bars in random lengths; same for hot-rolled bars with up to 10 per cent in shorts allowable. So far warehouse experience in ordering bars in random lengths has been very satisfactory, for by doing so they avoid a 15 cents per 100 pound mill extra and to date have had no difficulty in selling the odd lengths. One distributor reports percentage of odd sizes shipped by mills to date has averaged well below 10 per cent. New warehouse stock price books soon are expected to be available. In a number of products, the advance in warehouse size and quality extras are said to exceed those recently announced by the mills. Steel shipments from the mills have shown little change this month, with result a further depletion in warehouse inventories is indicated.

Cincinnati—Warehouse steel sales during February were in reduced volume due to a shrinkage in mill shipments. Demand was sustained so vigorously there was no seasonal drop in calls for structural steel. Requirements in sheets, plates and small bars were heavy against inadequate receipts.

Chicago—Warehouses continue to receive reasonably good supplies from mills, but the aggregate is inadequate to accommodate demand. This applies particularly to flat-rolled products, small carbon bars, light structurals and plates. Some slackening in demand is observed in larger sizes of hot-rolled bars and all sizes of cold-drawn. Alloys are available in adequate supply.

Scrap . . .

Receipts at consuming points . . . improve but supplies continue tight

Scrap Prices, Page 196

Philadelphia — Major grades of scrap again have advanced in price, with the steel melting grades up $1 to $2 a ton and No. 1 cupola cast up $2. Adverse weather conditions contributed to the strength of the market as well as to a substantial curtailment in the flow of material. The full effect of favorable weather upon scrap remains to be seen. Some trade interests believe that with the approach of spring scrap will be coming out in sufficient quantities to force a turn in the present upward trend of the market; others believe that while milder weather conditions of a sustained character will unquestionably ease the market, a strong undertone will nevertheless persist for some time to come. They point to a complete lack of stocks at some consumers' plants and at most dealers' yards. It will require time, they believe, for inventories to be built up, especially in view of the likelihood of continued high consumption and continued scarcity of pig iron. Until these inventories are accumulated in fair measure, there will be no marked weakness in the market, it is asserted. They also point out that the outlook for continued strength in cast scrap is even more pronounced than in steel scrap, as little demolition work is being carried on or will likely be carried on for a while.

No. 1 and No. 2 heavy melting, No. 1 busheling and No. 1 and No. 2 bundles are now holding at $35 to $36, delivered, with even higher prices considered probable within the next few days. No. 3 bundles are $32 to $33; machine shop turnings, $28 to $28.50; mixed borings and turnings, $27.50 to $28; short shovel turnings and cast iron borings, $28 to $28.50; bar crops and plates, cast steel, and punchings and plate scrap, $39 to $39.50. Electric furnace bundles are unchanged at $37.50 to $38, delivered, but heavy turnings are stronger at $35 to $36, cut structurals at $37.50 to $38, and No. 1 chemical borings $34 to $35. No. 1 cupola cast is higher at $48 to $49, delivered.

New York — Scrap brokers again have advanced their buying prices on a number of leading grades. They are now offering to pay $33, fob shipping point, on No. 1 and No. 2 heavy melting steel, No. 1 busheling and No. 1 and No. 2 bundles. They are offering $31 on No. 3 bundles, $25 on machine shop turnings and mixed borings and turnings, although holding unchanged at $26 for short shovel turnings. Brokers are quoting $35 for punchings and plate scrap, $34 to $35 for electric furnace bundles, $35 for cut structurals, and $25 for No. 1 chemical borings. Cupola cast is higher at $41 to $41.50, with charging box cast unchanged at $40 to $41. Unstripped motor blocks are higher at $39 to $40. Improved weather the past few days increased the flow of scrap, with the material moving principally into the eastern Pennsylvania and Pittsburgh districts.

Pittsburgh—Steel producers are using every possible method to induce customers to direct shipments of scrap to specific mills in return for assurance of finished steel allotments. This pra has resulted in cross-hauling and considerable by-passing of normal tribution channels. Some comp which ordinarily produce scrap for fo ry use are now preparing material steelmaking operations, further ac uating the limited scrap supply foundries. Consumers report a ma improvement in scrap receipts, bu the whole supply is tight and is ex ed to remain so while the steel ind maintains present record peacetime production. Collection and segreg of scrap are impeded by adverse we conditions, but dealers are movin available material as soon as possib take advantage of present high price els. Consumption of cast scrap ha ceded substantially in recent weeks to curtailment of foundry operation sulting from shortage of industrial some open hearths also have been down for same reason.

Boston — Steelmaking scrap tend higher and No. 1 heavy melti reported sold at $32, fob shipping Machine shop and short shoveling ings and chemical borings are up Bids for March scrap, Boston naval yard, brought a high of $30.10 fo prepared by Bethlehem Steel Co., for No. 2 by Luria Steel & Trading and $26.50 for light iron by the bidder. District melters of steel have low inventories. Most scra cumulated just before removal of controls has been moved and the of unprepared is limited with som provement in automobile scrap exp within two months. Cast scrap cont at high levels, but fewer melters are ing extreme prices, although $46 is for No. 1 cast despite some tonnage ing under $45. Stove plate brings and heavy breakable $42.

Cleveland—Undertone of the iro steel scrap market here remained s last week with purchasers resisting ther advance in prices. Although melting steel is still quoted $32.5 livered, local brokers have been o material at $40, fob shipping point. of material has improved recently would have shown a still greater inc had consumers been willing to pay er prices. Cast iron grades are esp ly strong with foundries paying up t for No. 1 cupola and heavy brea cast, $42 for charging box cast, $4 stove plate, and $35 for brake sh

Cincinnati—Quotations on heavy ing steel rose last week to a ran $24 to $35 as interpretation of the ket became clearer. The level o grades was proved as several melte duced former offering prices to a where flow of material stopped. C erable tonnage has been movin though most melters have not been fied. Rails for rerolling have t scarce. Specialties are not quite so s on price resistance.

Chicago — Only greater volu scrap can push steelmaking oper up to a level much above the 9 cent which has been maintained f past three weeks. Steelmakers n their top limit in hot metal from furnaces. Flow of scrap remains s although shipments suffer some because of freight car shortage. is optimism that volume will show rise in a few weeks as a result of weather and high level fabricati steel in manufacturing plants. C ers of scrap continue to reach far

melting material, resulting in deliv-
d price several dollars per ton over
al material. Prices are steady and
ng and appear to be attracting all
tonnage that is available.

Birmingham—A strong price tone de-
oped in the scrap market here last
ek, prices advancing $3 a ton on
avy melting grades. No. 1 and No. 2
avy melting steel, No. 1 and No. 2
ndles and No. 1 busheling advanced
a range of $32.50 to $33, delivered,
ile long turnings rose to $23.00 to
3.50 and short shovel turnings to
7.50 to $28. Cast iron borings were
oted $22 to $22.50 while bar crops,
nchings and plate scrap were quoted
4 to $34.50. In the cast iron grades,
. 1 cupola advanced to $39 to $40
ile stove plate was quoted $35 to $36;
. 1 wheels, $38 to $39. Railroad
ap advanced to the following ranges:
rolling rails, $41 to $42; scrap rails,
3 to $34; rails, three feet and under,
8 to $37; angles and splice bars, $37
$38.

St. Louis — Scrap shipments continue
improve under the stimulus of higher
ices. Published quotations are un-
anged but there are reports of trans-
tions involving $2 to $5 premiums.
e-in sales are reported on the increase
t mills say they are avoiding those in-
lving brokers who must buy the scrap
mills delivering the tie-in steel, as
s tends to boost scrap prices further.
lls generally are requiring customers
return their scrap. Mill reserves are
der 30 days but improving a trifle.
me melters are becoming secretive on
ckpiles, evidently feeling a price break
y be imminent which they don't want
discourage by admitting extreme need.
few brokers predict a break when re-
ves approach 60 days, but they can't
nject ure when this will be since the
rtage has diverted an unknown ton-
ge around brokers by means of direct
bricator-to-mill deals. Demand for
avy melting steel is intense. A rise
railroad offerings, anticipated in some
arters, has not materialized here.

Seattle—Steel scrap supplies have in-
eased, receipts from all sources having
proved. Mills believe the worst is
er and operations can continue at a
pacity rate. Improved weather has
mulated shipments from the country
eas and the higher prices are an added
ctor. Many small ships are being brok-
up and the larger breaking plants
e in heavier production with person-
l and equipment adjusted to new con-
ions.

ig Iron . . .

Pig Iron Prices, Page 192

New York—March pig iron quotas for
e housing program have been set up
a basis about comparable with Febru-
, making due allowance for the greater
mber of days in the current month.
is was in line with most trade expecta-
ns and, therefore, is being taken more
less in stride by both producers and
nsumers. However, the question as to
nether or not priorities are going to
continued after the end of this quarter
another matter.
Many non-rated consumers have long
ce been reconciled to winding up
e current quarter under the present
iority system, but have not given up
pe that either government ratings will
dropped completely or will at least

be greatly modified. Their position is that pig iron for housing in many instances, is now being allocated on a basis that well surpasses the actual need for the program, and all at considerable expense to themselves.

Appeals to Washington are still being made by many companies, either directly or through trade associations.

An added complication for some district foundries is the possibility of higher freight rates on pig iron from Buffalo and certain points in the west. Some foundries declare that if new schedules are approved it will increase the cost of their iron as much as 40 cents a ton.

Republic Steel Corp., Cleveland, seeking added sources of raw material because of shortage in scrap, has reopened its Fisher Hill Iron mine near Mineville, N. Y. The mine had been closed since CIO United Steelworkers strike last March. Approximately 65 miners are now at work, with number to be raised to 150.

Philadelphia — Non-rated pig iron consumers, who constitute the vast majority, continue to press their appeals to Washington for what they believe to be a more equitable share of production in the second quarter. March quotas showed little change and, in fact, little relief was expected over the remainder of this quarter. But with the turn of a new quarter, non-rated consumers are hoping that something can be done to divert a portion of the tonnage now going into housing to their own channels. They believe that housing tonnage surpasses all realistic requirements, a matter that would not so greatly concern them if they were not finding it so highly difficult and expensive to even maintain partial operations of their own.

While basic pig iron consumers are having their troubles, it is the small foundries who are finding it especially difficult and costly to maintain production by the excessive use of scrap, for the cast grades which they require are extremely scarce and there is even now a noticeable shortage of briquettes, used for sweetening purposes.

Boston — Balance in pig iron supply is retarded by decline in shipments from Buffalo and other outside districts; also, by lack of iron from integrated furnaces, the latter melting their own production in view of high scrap prices. This puts a heavy load from New England users on the Mystic furnace and with distribution still spread thin, involving around 4200 tons of priority tonnage monthly, some foundries are operating with smaller inventories than during the period of overall allocations. That some consumers are willing to pay around $70 and higher, Boston, for foreign iron indicates supply is still short with some of the heaviest melters. There is no improvement in supply of basic with users of that grade operating on a hand-to-mouth basis, this having a definite influence on steelmaking schedules at two steel works.

Chicago — Whether pig iron allocations end Feb. 28 or are extended would appear to be academic for until more iron can be produced and made available to foundries, operations can not be expanded above present level. So long as requirements of housing and railroad brake shoes remain at present volume and are accommodated by ironmakers either voluntarily or by priority there will not be enough iron for foundries.

Birmingham—Pig iron is causing many headaches in the industrial circles o South. Local sources charge 96 cent of southern iron is under c cation and cite figures to prove it. ernment sources say it is not more 75 per cent and cite figures just as vincing. In either event, iron users tinue to be caught short with the that for the first time on record from Texas will be moved into industrial district.

1947 Freight Car Output Goal Raised to 120,000

Freight car production goals have raised to 120,000 cars for 1947 follo a meeting staged by Representative C Reed of Kansas Wednesday with producers, freight car builders, off of the Office of Defense Transport and others. Mr. Reed said pledges been received from steel produce sufficient steel for production of 1 cars per month by June.

Present production is less than cars per month and doubt was expr after the meeting by officials of the fice of Civilian Production that cient steel could be diverted until in the year for the new rolling stock gram unless housing requirements scaled down meanwhile.

Those attending the meeting were by R. V. Fletcher, president, Associ of American Railroads, that 125,000 are actually needed. Other indu users supported this figure and wa of serious interruptions in various unless more cars are made available

In addition to steel, lack of wh and other components may hinder creased production of cars, informe ficials said after the meeting. Of 120,000 cars scheduled for produc between 50 and 60 per cent will be cars; the remainder, gondolas, ho and other open-type cars.

Rails, Cars . . .

Track Material Prices, Page 191

New York — Domestic freight awards in the month just ended wil the heaviest since December, 194 not considerably longer. Prelimi figures indicate that more than 15 cars have been let, compared with 16 in December three years ago. Whe returns are in for February, it is p ble the total will even exceed the cember, 1944, figure.

The present upsurge reflects the sure now being brought by the gov ment on the railroads and on the pliers of railroad equipment steel to up the car building program, becaus the critical shortage which now e

Shortage of steel car wheels is to be the particular chokepoint in further expansion of the car buil program. According to some report cast iron wheels were to be decided u to supplement requirements, arra ments would be made fairly prom for supplying sufficient steel and materials for an output of 10,000 per month.

Included in latest orders are 500 f ton steel box cars for the Wabash 200 fifty-ton steel box cars for the troit, Toledo & Ironton, all to be at the Chicago plant of the Amer Car & Foundry Co.

g Iron Trade Offers Plan Cover 1947 Housing

Civilian Production Administration the Office of the Housing Expediter expected to announce shortly a plan over pig iron for housing needed in second, third and fourth quarters. ently the Joint Pig Iron Industry visory Committee recommended that nal channeling of iron into the hous- program be ended Mar. 31, offering are for housing needs under a volun- allocation plan.

t is understood the industry has prom- to ship iron into housing during the ainder of 1947 in approximately the e volume as in the first quarter, in nt mandatory allocations are removed. Many foundries currently receiving orities for pig iron for housing are re- ted using a 90 per cent pig iron rge in cupolas as against a normal 50 charge of scrap. This is accentuat- the pig iron shortage.

CPA officials, reviewing the long-term look in pig iron, report a Texas blast nace will resume production within next six to eight weeks. Another de- opment which may increase produc- n this year is the improvement in qual- of coking coal. The drop in produc- n of basic and merchant pig iron from million tons in 1945 to 45 million tons 1946 is said to reflect in part use of a or grade of coal and the coal strikes. e of a better grade of coal, it is imed, will permit a 5 per cent in- ase in pig iron output this year.

ase Limitations on erchant Quality Bars

(*Concluded from Page 87*)

end product be rejected because the stock was unsound.

The revised AISI hot-rolled carbon l bar manual states steels of mer- nt bar quality are not subject to a cified silicon content. Steels of spe- bar quality may be specified to stand- silicon limitations as follows: 10 per t for basic open-hearth carbon steel to AISI grade designation 1015 ex- ive; for AISI grades 1015 to 1095, a per cent silicon max may be specified, 0 to 20 per cent, or 15 to 30 per cent. other limitations are required, the le then becomes a non-standard steel. manual also tabulates the silicon tations for resulphurized open-hearth on steel bars.

est of Scrap Market lieved Near at Hand

(*Continued from Page 82*)

melt will show little, if any, de- on from the pattern of recent years, gh the market currently is distorted normal to an unheard of degree he tie-in sales, special trades, and assing of normal market channels.

The record of consumption, 1935 through 1946, is given in the following tables.

SCRAP CONSUMPTION—1935-1946

(In openhearth, cupola, electric furnaces and blast furnaces)

(Gross Tons)

Year	Total	Purchased Scrap
1935	25,743,529	12,889,394
1936	35,443,863	17,213,687
1937	37,018,832	17,887,775
1938	20,799,579	9,885,552
1939	31,742,246	14,726,478
1940	38,939,944	17,176,318
1941	51,402,427	22,201,358
1942	51,301,684	22,754,114
1943	52,410,777	22,252,042
1944	52,154,092	21,545,244
1945	47,769,000	21,059,000
1946	42,144,981*	19,357,990*

* Estimated.

OPENHEARTH SCRAP CONSUMPTION—1935-1946

(In gross tons)

Year	Total	Purchased Scrap
1935	19,119,627	9,530,610
1936	26,295,691	12,546,809
1937	26,414,037	12,456,418
1938	14,607,630	6,651,479
1939	22,795,434	10,052,268
1940	27,685,477	11,328,244
1941	35,645,970	14,215,051
1942	35,321,389	14,387,563
1943	35,905,106	13,188,928
1944	36,435,765	13,215,830
1945	33,759,000	13,535,000
1946	28,968,981*	12,559,090*

* Estimated.

CUPOLA SCRAP CONSUMPTION 1935-1946

(In gross tons)

Year	Total	Purchased Scrap
1935	4,158,623	2,241,788
1936	5,814,433	3,157,590
1937	6,507,473	3,629,078
1938	4,191,902	2,451,214
1939	5,727,405	3,176,552
1940	7,169,486	3,904,265
1941	9,432,265	4,963,637
1942	8,084,394	4,569,570
1943	7,146,415	3,985,409
1944	6,734,815	3,422,046
1945	6,478,000	3,264,000
1946	7,375,000*	3,651,000*

* Estimated.

BLAST FURNACE SCRAP CONSUMPTION, 1935-1946

(In gross tons)

Year	Total	Purchased Scrap
1935	1,549,720	666,220
1936	2,086,310	903,310
1937	2,371,500	903,514
1938	1,064,410	300,578
1939	1,725,851	721,286
1940	1,857,437	708,343
1941	2,593,695	1,175,957
1942	2,622,778	1,225,535
1943	3,185,667	1,919,794
1944	3,248,626	1,978,877
1945	2,990,000	1,850,000
1946	2,189,000*	1,059,900*

* Estimated.

ELECTRIC FURNACE SCRAP CONSUMPTION, 1935-1946

(In gross tons)

Year	Total	Purchased Scrap
1935	915,559	450,776
1936	1,247,429	605,978
1937	1,725,822	898,765
1938	935,637	482,281
1939	1,493,556	776,392
1940	2,227,544	1,235,466
1941	3,730,497	1,846,713
1942	5,273,123	2,571,446
1943	6,173,590	3,157,911
1944	5,734,886	2,928,491
1945	4,542,000	2,410,000
1946	3,612,000*	2,088,000*

* Estimated.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1100 tons, school 157, Queens, New York city, to Harris Structural Steel Co., that city.

1000 tons, warehouse, Brockelman Bros. Inc., Worcester, Mass., to Bethlehem Steel Co., Bethlehem, Pa.

975 tons, boiler supports, city of Los Angeles, to Bethlehem Steel Co., Bethlehem, Pa., through Riley Stoker Co., Worcester, Mass.

500 tons, Du Pont laboratory, Carney's Point, Pa., to Ingalls Iron Works, Birmingham.

180 tons, telephone building, Nutley, N. J., to B. Katchen Iron Works, Newark, N. J.

160 tons, additions and alterations, Borno Cleaners, Philadelphia, to Norris Iron & Wire Co., Bridgeport, Pa.

100 tons, building, Owens-Illinois Glass Co., Fairmont, W. Va., through Hughes-Foulkrod Co., Philadelphia, to Frank M. Weaver Co., Philadelphia.

Unstated, L. A. Fry Mfg. Co., building, Portland, Oreg., to Soule Steel Co., Portland.

STRUCTURAL STEEL PENDING

6600 tons, veteran's hospital, Fort Hamilton, Brooklyn, Bethlehem Steel Co., Bethlehem Pa., low bidder.

2000 tons, die casting plant, Hillside, Ill., for Aluminum Co. of America; John Griffiths & Son Construction Co., Chicago, contractor; bids Feb. 20.

1600 tons, women's dormitory, Penn State College, Penn State, Pa.; readvertised, bids Mar. 4.

1300 tons, revised requirements from 4000 tons, state work, including approach, spans and ramps, Passaic river bridge, Newark and Harrison, N. J.; Ole Hansen, Vetnor, N. J., low on general contract.

700 tons, warehouse, Fort Wayne, Ind., for United States Rubber Co.; bids asked.

613 tons, miscellaneous structural steel, Chicago, for Department of Public Works; bids March 7.

230 tons, state bridge, Cumberland county, Pennsylvania, Mar. 21.

200 tons, state bridge, Elk county, Pennsylvania, Mar. 21.

170 tons, state bridge, Lancaster-Chester counties, Pennsylvania, Mar. 21.

160 tons, women's residence hall, Urbana, Ill., for University of Illinois; Warner Construction Co., Chicago, contractor; bids asked.

Unstated, trash racks for intake structure, Roza Division; bids to Bureau of Reclamation, Denver, Mar. 24.

REINFORCING BARS . . .

REINFORCING BARS PLACED

4000 tons, Marcy housing project, Brooklyn, for New York City Housing Authority, general contract has been awarded to Cauldwell-Wingate Co., 101 Park Ave., New York.

1800 tons, veteran's hospital, Peekskill, N. Y., Merritt-Chapman & Scott, New York City, awarded general contract; another contract in connection with the same project, involving at least 500 tons of reinforcing steel, has been placed with Fred Brotherton, Hackensack, N. J.

425 tons, elevators, Minneapolis, for Archer Daniels Midland Co., Minneapolis, to Truscon Steel Co., Youngstown, O.; Fegles Construction Co., Minneapolis, contractor.

160 tons, dormitory, University of Vermont, Burlington, Vt., to Truscon Steel Co., Boston.

REINFORCING BARS PENDING

328 tons, including 270 tons wire mesh and 68 tons bars, paving project F-5, Marshall county, Ill., for State Highway Department; bids Feb. 7 rejected, new bids Feb. 28.

100 tons or more, 356-foot Washington state bridge, Chelan county; general contract to Henry Hagman, Cashmere, Wash., low $108,490.

100 tons, construction for Bonneville Power Administration; Alaska Junk Co., Portland, low, $9805.

PLATES . . .

PLATES PENDING

500 tons or more, 13,800 feet, 48-inch, ⅜ plate, Bow Lake airport supply line, S bids soon.

Unstated, pipe and fittings, Yakima p Washington; bids to Bureau of Reclam Denver, Mar. 10.

Unstated, water tank and tower; bids t clerk, Pullman, Wash., Mar. 11.

Unstated, elevated steel water tank, Wa ton State College, Pullman, Wash.; bids 10.

PIPE . . .

STEEL PIPE PLACED

300,000 tons, approximately, 30 to 31-inch ricated steel pipe, for a 1000-mile line Arabia, has been awarded by Trans-A Pipe Line Co., with plates to be suppli United States Steel Corp.'s Geneva wo Utah, and fabrication to be done by Co dated Steel Corp., Los Angeles.

STEEL PIPE PENDING

116,375 tons, 20, 22 and 24-inch oil pipe, as Pipe Line Co., Shell Pipe Line Corp installation in the southwest, pending.

Unstated tonnage, 1380-mile natural gas line from southwest Texas to the Phi phia-New York area, Trans-Continental Line Co., is renewing application to F Power Commission for permission to bu

CAST IRON PIPE PENDING

1130 tons, mostly 18-inch, cast iron pipe, ton, Conn.

530 tons, 20-inch cast iron pipe, Sprin Mass.

250 tons, 12 and 8-inch cast iron pip Pullman, Wash.; bids Mar. 11.

200 tons, 6 to 12-inch, cast iron pipe, Nee Mass.

200 tons, Perkins Lake extension, Seattle; Purcell, Seattle, low.

150 tons, 12 and 8-inch open bell for ington State College, Pullman, Wash.; Mar. 10; Dr. Wilson Compton, presid

125 tons, 8 and 6-inch water pipe; bids clerk, Walla Walla, Wash., Feb. 26.

RAILS, CARS . . .

RAILROAD CARS PLACED

Chesapeake & Ohio, 18 head-end baggag cars at about $960,000, to Pullman-St Car Mfg. Co., Chicago. Eight of the are postal cars with 60-foot mail co ments; 10 are for baggage and mail w feet allotted to mail.

Detroit, Toledo & Ironton, 200 fifty-to box cars, to American Car & Foundr New York, for construction at Chicago

Monsanto Chemical Co., 14 seventy-to cars, to General American Transportati Chicago.

St. Louis Refrigerator Car Co., 50 forty- frigerator cars, to its own shops.

Wabash, 500 fifty-ton steel box cars, to A Car & Foundry Co., New York, for co tion at Chicago plant.

RAILROAD CARS PENDING

Atchison, Topeka & Santa Fe, 500 fifty- tomobile cars, pending.

LOCOMOTIVES PENDING

Chicago, Milwaukee, St. Paul & Pacific, sel-electric locomotives, bids asked; li prises eleven 1500-horsepower com road and switch engines, five 1000-hor switch engines, and four 2000-horsepo senger engines.

New Orleans & Lower Coast, Missouri subsidiary, three 660-horsepower D comotives, authorized.

CONSTRUCTION AND ENTERPRISE

CALIFORNIA

GLENDALE, CALIF.—Lang Tool & Die Co., 747 W. Wilson Ave., has received CPA approval for construction of new factory building, 746 Salem St., to cost $22,500.

LOS ANGELES—Bethlehem Pacific Coast Steel Corp., 3391 E. Randolph St., plans construction of two-story office building addition to cost $44,600. CPA approval has been received.

RICHMOND, CALIF.—Rheem Mfg. Co. plans construction of $1 million factory building near Rt. 20 and the Southern Pacific railroad tracks. CPA has approved proposed plant.

SAN FRANCISCO—Pacific Gas & Electric Co., 245 Market St., has awarded separate contracts totalling $3 million for 11 miles of water transmission tunnels.

SAN BERNARDINO, CALIF.—Familian Pipe & Supply has plans in preparation for 75 x 100-ft warehouse and 20 x 75-ft office building to be located on Colton Ave. Oleg Lopatin is architect and George F. Smith and Wesley C. Moore, structural engineers.

CONNECTICUT

BRIDGEPORT, CONN.—Bridgeport Brass Co., 30 Grand St., will build a 1 story 50 x 72 ft boiler plant 60 ft high at a cost of $142,000.

HARTFORD, CONN.—State Highway Commission has awarded separate contracts totalling $6 million for a 12 span, 2448-ft toll bridge over the Connecticut river.

STAMFORD, CONN.—Connecticut Power Co., 266 Pearl St., Hartford, Conn., plans a $6 million power generating station to include a 40,000 kw turbogenerator, boilers, etc. Consulting engineer is Stone & Webster Engineering Corp., 20 Central St., Boston.

WATERBURY, CONN.—Scovill Mfg. Co., 99 Mill St., has awarded a contract at $1,721,000 to Turner Construction Co., 38 Newbury St., Boston, for a brass rolling mill.

ILLINOIS

CHICAGO—Superior Aluminum Foundry, 1229 W. Corland St., suffered severe damage to its plant recently as a result of a fire.

CHICAGO—Sterling Tool Products Co., 363 E. Ohio St., has completed arrangements with Clearing Industrial District for construction of a one-story, mill-type plant at Hawthorne and Armitage Aves.

CHICAGO HEIGHTS, ILL.—American Manganese Steel Division, American Brake Shoe Co., has received CPA approval for construction of a foundry addition, to cost $556,000. Equipment will raise total cost to $1 million. Ragnar Benson Inc., 4744 W. Rice St., Chicago, is general contractor.

EAST ST. LOUIS, ILL.—City will build a sewage system and drainage facilities to cost $2,165,000.

INDIANA

ANDERSON, IND.—E. C. Schleyer Pump Co. Inc., P. O. Box 106, has been organized with 300 shares of $100 par value, by Victor Schleyer, Clara Schleyer, Jack L. Henricks and Igenborg C. Henricks.

DECATUR, IND.—Hoosier Machine & Casting Co. Inc., 159 N. Second St., has been organized with 1000 shares of no par value stock to make grey iron castings and machine parts, by Lawrence J. Woodruff, Charles W. Kent and Burdette Custer.

EAST CHICAGO, IND.—Sinclair Refining Co., 3500 Indianapolis Blvd., has plans for four process buildings, pump house, store house, tool house and office building to cost $264,500. Engineer is W. Hess, c/o owner.

INDIANAPOLIS—J. I. Case Co. Inc. is planning construction of warehouse and office building to cost $133,250.

KOKOMO, IND.—Haynes Stellite Co. plans construction of a $150,000 warehouse. Erection of a recently announced rolling mill has begun.

MUNCIE, IND.—Warner Gear Division, Borg-Warner Corp., has received CPA approval for construction of plant addition to cost $220,000.

MICHIGAN

BAY CITY, MICH.—Bay Mfg. Division, Electric Auto-Lite Co., is contemplating construction of a $435,000 factory.

BAY CITY, MICH.—Apollo Engineering Corp., 1906 S. Erie St., has been organized with $75,000 capital to conduct a general manufacturing business, by Wells K. Gregg, 1600 Center Ave.

DETROIT—Harding Tool & Die Works has awarded contract for construction of factory to Congress Construction Co.

DETROIT—Gabriel Steel Co. has awarded contract for plant addition to Albert A. Albrecht Co.; Smith, Hinchman & Grylls Inc., is architect.

DETROIT — Keystone Detroit Sanitary Co., 2720-32 W. Davison, has been formed with $150,000 capital to manufacture plumbing and heating materials, by Herbert S. Charfoss, same address.

DETROIT—H. & W. Mfg. Co., 21820 W. Eight-Mile Rd., has been organized with $100,000 capital to conduct a general manufacturing business, by Harry B. Wright, 13115 Ellen Ave.

DOWAGIAC, MICH.—Gillen Products Corp., 103 Fenn Ave., has been formed with $50,000 to manufacture heating and air conditioning equipment, by John L. Gillen, 303 Center St.

FARMINGTON, MICH.—Ornamental Iron & Stair Co., 39395 Twelve-Mile Rd., has been formed to manufacture stairs, railings, etc., by Joseph Reinholz, 16630 Prest, Detroit. It is capitalized at $50,000.

GRAND LEDGE, MICH.—Grand Ledge Metal Products Co., 121 E. Jefferson, has been incorporated with 350 shares of no par value to manufacture automatic screw machines, by Clayton E. Hunt, same address.

GRAND RAPIDS, MICH.—Michigan Wheel Co., 235 Market St., will build a $100,000 motor wheel plant. Plans are by W. P. McLaughlin, 203 Watson Bldg.

GRAND RAPIDS, MICH.—Nelson Metal Products Inc., 510 32nd St. SE., has been organized with $100,000 capital to manufacture and fabricate metal parts, tools and kindred items, by Roy B. Nelson, 1825 Union Blvd. SE.

HIGHLAND PARK, MICH. — Sennett Steel Corp., 15843 Second Blvd., has been formed with $50,000 to conduct a general manufacturing business, by Thomas G. Sennett, 2214 Woodland, Royal Oak, Mich.

HOLLAND, MICH.—Bohn Aluminum & Brass Corp., Detroit, has awarded contract for construction of local $125,000 plant addition to Krieghoff Co., Detroit. Krecke & Sewell, Detroit, architects.

MUSKEGON, MICH.—Monarch Pattern & Engineering Co., 2838 Henry St., RFD 1, has been formed with $100,000 capital to manufacture wood and metal patterns, by Anton J. Kohlbeck, P.O. Box 2, Muskegon Heights, Mich.

PONTIAC, MICH.—Pontiac Motor Division, General Motors Corp., has received CPA approval for construction of a $400,000 remodeling project.

PONTIAC, MICH.—Pontiac Products Co., 350 S. Sanford, has been formed with $50,000 for machining and fabricating metals and other products, by M. H. Schwartz, 2116 Penobscot Bldg., Detroit.

RICHMOND, MICH.—Richmond Mfg. Co., 424 S. Main, has been formed with $50,000 capital to manufacture dies, molds, jigs and fixtures, by Ruth U. Pace, 1373 Cadieux Rd., Grosse Pointe Park, Mich.

SAGINAW, MICH.—City will build a sewage disposal plant to cost $4,300,000.

MINNESOTA

MINNEAPOLIS—Woolery Machine Co. is planning construction of a one-story factory addition.

MINNEAPOLIS—Electric Machinery Mfg. Co., 1331 Tyler St. NE., has awarded contract to Dean L. Witcher for one-story machine shop addition to cost $100,000.

MOORHEAD, MINN.—Moorhead Foundry has been organized by O. G. Schmidt, Otto Lundgren and A. T. Brandt to produce grey iron castings and other products.

NORTH ST. PAUL, MINN.—Standard Conveyor Co. is planning construction of a large factory addition.

ST. PAUL—Minnesota Mining & Mfg. Co. plans construction of four-story laboratory to cost about $1 million.

ST. PAUL—Huot Mfg. Co. has awarded general contract to Sauers Construction Co. for one-story, 237 x 76-ft factory, 550 N. Wheeler Ave.

NEW JERSEY

CAMDEN, N. J.—General Chemical Co., 1100 Line St., has plans under way for a manufacturing plant to cost $163,000.

SALEM, N. J.—Anchor Hocking Glass Co., 83 Griffith St., plans alterations for its furnace room building which will cost $130,000.

NEW YORK

ALBANY, N. Y.—City proposes to construct storm relief sewers costing more than $2,400,000.

SYRACUSE, N. Y.—Crucible Steel Co. of America, State Fair Blvd., will build a melt shop costing $200,000. Architects are Anderson & Walker, Michigan Bank Bldg., Detroit.

OHIO

BARBERTON, O.—Columbia Chemical Division, Pittsburgh Plate Glass Co., plans expenditure of $80,000 for boiler improvement and smoke elimination.

CANTON, O.—Canton Malleable Iron Co., 2400 13th St., recently suffered a fire which caused $100,000 damage.

CLEVELAND—Pelican Industries Inc., 1478 Euclid Ave., has been organized to manufacture metal furnace cases, tool boxes and cabinets, by Raul Hoehn and J. Orchie.

CLEVELAND—Precision Permold & Machine Co. Inc., 4338 Bradley Rd., has been incorporated and contemplates construction of a 60 x 100-ft plant on Brookpark Rd.

CLEVELAND—Penicillin Machine Co. has been organized by Richard H. Stewart, Union Commerce Bldg., to manufacture medical and surgical instruments. The firm is seeking a plant location.

COLUMBIANA, O. — Columbiana Pump Co., Railroad St., is planning to add new tools, machinery and equipment to its recently completed foundry addition.

GALLIPOLIS, O.—Diamond Alkali Co., Pittsburgh, has purchased 1756 acres of land near here from WAA and plans construction of a chemical plant on the tract.

LORAIN, O.—Ohio Public Service Co. is planning construction of a power station to cost $2,010,000.

LORAIN, O.—National Tube Co. has obtained a building permit for construction of a $2,160,856 blooming mill soaking pit building.

NILES, O.—National Gypsum Co., 325 Delaware Ave., Buffalo, plans construction of a $164,000 plant addition at Walnut and Spring Sts. CPA approval has been received.

YOUNGSTOWN—Mahoning Paint Corp., 85 Jones, is installing additional paint grinding machinery.

PENNSYLVANIA

PHILADELPHIA—Yale & Towne Mfg. Co., 4530 Tacony St., has awarded a $10 million contract to Turner Construction Co., 150 Walnut St., for a manufacturing plant.

READING, PA.—Container Co., division of Continental Can Co., Seventh and Laurel Sts., will build a plant addition costing $132,000